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water) system; water supply, storage, and treatment facilities; waste management and disposal facilities; fuel receiving, storage, and handling facilities; fire protection systems; emergency power; and construction worker accommodations. Ancillary facilities for the plant as a whole would include access road(s), parking areas, railroad spur, switchyard, offices, warehouses, maintenance facilities, and temporary construction facilities. An 8-foot-high chainlink security fence would be provided around the main plant area. Gates would be provided at all access roads and railroad entrances.

1.2.2 Construction Worker Accommodations

On-site housing would be provided for the construction workers. Bachelor quarters would be provided for approximately 220 construction personnel. The quarters would be composed of several buildings and could house two workers to a room with a bathroom. There would be a staffed kitchen, mess hall, laundry room, and recreation hall.

In addition, a recreational vehicle park would be constructed to accommodate approximately 300 vehicles. This park would consist of parking spaces, electrical, water, and sewer hook-ups, shower/toilet facilities, and laundry building.

1.2.3 Access Road

The proposed plant access road would run from Highway 93 near Wilkins, east for approximately 4 miles along an existing county road, and then southeast to the project site. The county road would be upgraded, and approximately 10 miles of new road would be constructed from the county road southeast to the plant site. A stream-crossing culvert would be used to cross the main channel of Thousand Springs Creek. An earthen embankment would carry the road across the remainder of the floodplain. Smaller pipe culverts would be used, as required, for crossing other minor drainage channels. The access road to the plant would be fenced with a three- or four-wire, BLM-specified fence to prevent domestic livestock from

encroaching on the road while allowing wildlife to cross. A paved parking area would be provided near the administration offices. Gravel bed maintenance roads would be used to service the evaporative wastewater pond and cooling tower.

1.2.4 Railroad

The Southern Pacific Railroad has a two-track line from east of the plant site that passes through Montello and Cobre to Wells. A railroad spur, to transport coal to the facility, would be constructed off of the Southern Pacific Railroad track beginning approximately 3 miles northwest of Cobre at Valley Pass and would travel northwest to the plant site. The railroad spur, unloading loop, and switchyard would be designed and constructed in conformance with railroad standards. The railroad spur to the plant site would be fenced using the same specifications as those for the access road. The loop would be designed so that two unit trains could unload coal simultaneously.

1.2.5 Construction of the Power Plant

The proposed power plant, upon completion of development, would consist of eight 250 MW coal-fired, steam-electric generating units. Construction of the first unit would fall into seven distinguishable but overlapping phases:

1. Access road construction and site preparation
2. Construction of internal access and utility network
3. Construction of plant facilities (housing, shops, fire pumphouse, etc.)
4. Concrete foundation installation
5. Structural steel erection
6. Major equipment and main building erection
7. Piping, electrical connection, and instrumentation installation

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1.0 INTRODUCTION

This document is the Socioeconomics Technical Report prepared as supporting documentation for the Environmental Impact Statement (EIS) for a proposed coal-fired power plant which the Thousand Springs Generating Company (TSGC) plans to construct and operate in Elko County, Nevada. TSGC is a consortium of investors. Sierra Pacific Resources is a member of the consortium and acts as project manager for the consortium. The proposed project involves a land exchange with the Bureau of Land Management (BLM) as well as construction and operation of the power plant and is called the Thousand Springs Power Plant (TSPP) project.

1.1 LAND ACQUISITION

The proposed action relative to land acquisition is to conduct a land exchange between the TSGC and the BLM. TSGC is offering approximately 12,774 acres of private lands in the Snake Mountains and 640 acres in Toano Draw in exchange for approximately 15,962 acres of public lands in Toano Draw.

The proposed land exchange would proceed on a surface estate only basis (i.e., mineral rights to the lands would not be exchanged). Measures would be taken to protect access, thereby enabling the BLM to continue to administer the public lands in the Toano Draw area. Similarly, all previous access routes from all directions will be preserved for public access purposes except for the immediate fenced project area.

1.2 DESCRIPTION OF THE PROPOSED POWER PLANT

1.2.1 Design of the Power Plant

The TSPP electric generation complex, upon completion of development, would consist of eight 250-megawatt (MW) (nominal net) coal-fired, steam-electric generating units, designed for baseload duty but with load cycling capability. The proposed action includes eight units that are essentially replicates of the Number Two generating unit at the North Valmy Power Plant, jointly owned by Sierra Pacific Power Company (Reno, Nevada) (a subsidiary of Sierra Pacific Resources) and Idaho Power Company (Boise, Idaho). It is expected that the air emissions control systems for TSPP would be similar to the North Valmy Unit Two system with modifications necessary for compliance with regulations that have become effective since that unit was constructed. As proposed, the TSPP would burn pulverized low-sulfur western coal, use a dry-type sulfur dioxide scrubber to conserve water, use a baghouse filter for particulate removal as the most effective available technology in conjunction with the use of low-sulfur coal, and use a counterflow cooling tower as the most favorable based on net energy efficiency. i.e., low pumping requirements, and to minimize potential freezing problems. Any deviations from the basic design of North Valmy Unit Two would be dictated by a change in governmental regulations, Best Available Control Technology (BACT) requirements, modernization of equipment by suppliers, or engineering needs due to the difference in location and altitude. The Number Two generating unit at North Valmy was selected as the proposed design because of its reliability and availability, and also because of its ability to meet or exceed current environmental regulations with proven technology. This was recognized by the National Society of Professional Engineers when it was selected as one of ten outstanding engineering achievements of 1985 in the United States.

Major components of each power generation unit would be as follows: the steam generator (boiler); turbine-generator; air emissions control systems (baghouse, dry scrubber, boiler); stack; circulating water (cooling

Construction of the first unit is scheduled to commence in early 1991 and be completed in late 1994. Commercial operation of this unit is anticipated in the second quarter of 1994. Construction of additional generating units would require about 34 months each and would overlap with the preceding unit by 10 months. This would allow for an efficient transition of resources from unit to unit.

The first peak of construction workers is anticipated to be 805 workers in 1993, associated with construction of Units 1 and 2. The average workforce during that year is anticipated to be approximately 500. A second workforce peak is anticipated between the completion of the fourth and fifth units.

Site clearing, grading, and surfacing would be confined to those areas to be built upon, utilized during construction, or which are part of the ash disposal area. Site clearing would be conducted on an "as-required basis," and individual areas would be cleared just prior to construction startup. Vegetation that required removal would be disposed of on site in a Class III disposal site. In total, approximately 1780 acres of land would be disturbed for construction of the power plant and ancillary linear facilities upon completion of development.

1.2.6 Operation of the Power Plant

The proposed action is for the power plant to be a baseload power plant, operating 24 hours a day, 365 days per year. The plant would operate using three 8-hour workshifts. The operational workforce would be approximately 145 persons, for each pair of units or 564 operation workers upon buildout of all eight units.

Coal would be delivered to the plant site by unit trains. The coal would be produced from mines at Kemmerer, Wyoming and Scofield, Utah. Each mine would supply coal in an amount equal to 50 percent of the heat input to the generating units. Coal would be delivered along a new rail spur,

approximately 14 miles long, between the Southern Pacific Transportation Company's main line at Valley Pass and the plant site. It would be the responsibility of Southern Pacific Railroad to deliver coal to and over the new rail spur and to the power plant.

The turbine-generator of each unit would have a nominal gross (nameplate guarantee) rating of 267,521 kilowatts (kW), which would yield a net output of 250,000 kW. The maximum gross generating capability (maximum load) for each unit would be 292,666 kW with the control valves wide open, and steam at 5 percent overpressure (above the nominal design pressure).

The estimated normal average load factor for a unit would be 85.8 percent for the first 5 years of operation. The load factor would progressively decrease to an estimated 53.2 percent in the 31st year of operation and thereafter. The average load factor for each unit over its expected 35 years of operation would be about 75 percent.

The air emissions control system would reduce the stack gas emissions of particulate matter (fly ash) and sulfur dioxide (SO_2) to below the regulatory prescribed maximum. The control system would include a lime spray dry scrubber system to remove sulfur oxides (SO_x) and a fabric filter to remove particulates. Generation and emission of nitrogen oxides (NO_x) would be controlled by design and control of the combustion process within the furnace.

Water, for use in generating steam and for transferring plant generated waste heat to the atmosphere, would be obtained from wellfields in the Thousand Springs drainage basin. The wellfield to supply two or three generating units would be located in Toano Draw Subbasin, which is also where the power plant would be located. For the other five or six units, it is expected that one or more wellfields would be developed along the lower reaches of Thousand Springs Creek in the vicinity of Gamble Ranch. The estimated maximum plant water requirement is 4000 acre-feet/year per

generating unit, or 32,000 acre-feet/year upon completion of plant development.

Water management facilities at the power plant would be designed for "zero discharge." The maximum practical reuse and recycling of water is planned. All wastewater generated by the plant which could no longer be reused would be evaporated from on-site holding ponds, so there would be no off-site discharge of any plant wastewater.

1.3 DESCRIPTION OF ALTERNATIVES

In addition to the Proposed Action, several alternatives were identified. The alternatives considered in this analysis are grouped into five categories: power generation alternatives, site alternatives, project component alternatives, land acquisition alternatives, and no action alternative. Table 1-1 summarizes all project component alternatives considered and those selected for analysis.

The remainder of this report is organized as follows: Section 2.0 describes the affected environment, and Section 3.0 discusses the environmental consequences. Section 4.0 lists references cited.

Table 1-1. SUMMARY OF ALL PROJECT COMPONENT ALTERNATIVES CONSIDERED AND THOSE SELECTED FOR ANALYSIS

Project Component	Proposed Action	Alternatives Considered	Alternatives Selected for Analysis
Power Generation	Eight 250-MW coal-fired units	Solar Wind Nuclear Fusion Geothermal Hydroelectric Solid Waste Cogeneration Oil or Natural Gas Nuclear Fission	No Action
		No Action	
Site	Toano Draw	Nine Candidate Site Regions Throughout the State	None
Access Road	Off of Highway 93 near Wilkins	Moor Summit Off of State Highway 233 Near Cobre	Moor Summit
		Brush Creek Off of Highway 93 3.5 Miles South of Wilkins	Brush Creek
Railroad	Off of Southern Pacific near Cobre	Off of Union Pacific near Wells Paralleling Highway 93	None
Construction Workers Accommodations	On-site Construction-Worker Camp and RV Park	Construction-Worker Camp and RV Park Near Cobre	No Construction-Worker Camp
		Construction-Worker camp and RV Park Near Wilkins	
		No Worker-camp	

Table 1-1. SUMMARY OF ALL PROJECT COMPONENT ALTERNATIVES CONSIDERED AND THOSE SELECTED FOR ANALYSIS (continued)

Project Component	Proposed Action	Alternatives Considered	Alternatives Selected for Analysis
Cooling System	Mechanical Draft Cooling Towers	Natural Draft Cooling Towers	None
		Cooling Ponds	
		Dry Mechanical Draft Cooling Towers	
		Wet/Dry Towers	
Water Supply	Wellfield for 3 Units South of Plant Site in Toano Draw; Wellfield for 5 Units in Gamble Ranch Vicinity	Wellfield for 2 Units South of Plant Site in Toano Draw; Wellfield for 1 Unit North of Plant Site in Toano Draw; Wellfield for 5 Units in Gamble Ranch Vicinity	Wellfield for 2 Units South of Plant Site in Toano Draw; Wellfield for 1 Unit North of Plant Site in Toano Draw; Wellfield for 5 Units in Gamble Ranch Vicinity
		Wellfield for 2 Units South of Plant Site in Toano Draw; Wellfield for 6 Units in Gamble Ranch Vicinity	Wellfield for 2 Units South of Plant Site in Toano Draw; Wellfield for 6 Units in Gamble Ranch Vicinity

Table 1-1. SUMMARY OF ALL PROJECT COMPONENT ALTERNATIVES CONSIDERED AND THOSE SELECTED FOR ANALYSIS (continued)

Project Component	Proposed Action	Alternatives Considered	Alternatives Selected for Analysis
Oxides of Nitrogen Control	Low-NO_x burner with combustion modification	Selective Catalytic Reduction with Ammonia	None
		Noncatalytic Reduction with Ammonia	
		Noncatalytic Reduction with Area	
		Low NO_x Burner	
		Flue Gas Recirculation	
		Fluid Bed Combustion	
Sulfur Dioxide Control	Lime Spray Drier	Wet Scrubber	None
		Fluid Bed Combustion	
		Limestone Injection into Furnace	
		Dry Lime Injection into Duct	
Particulate Matter Control	Baghouse	Electrostatic Precipitator	None

Table 1-1. SUMMARY OF ALL PROJECT COMPONENT ALTERNATIVES CONSIDERED AND THOSE SELECTED FOR ANALYSIS (concluded)

Project Component	Proposed Action	Alternatives Considered	Alternatives Selected for Analysis
Land Acquisition	Land Exchange	Land Tenure Adjustment	Land Tenure Adjustment
		Selling the Public Lands	Selling the Public Lands
		No Action	No Action

2.0
SOCIOECONOMICS - AFFECTED ENVIRONMENT

This section describes existing and projected socioeconomic conditions in the study area. Categories discussed include population; employment and income; housing; community service and utilities; public finance; and overall social conditions. Recent changes in the study area associated with the gold mining boom in the Carlin Trend district are included in the description. The section identifies existing deficiencies and planned improvements or expansions in community services that are not project-related. An effort was made to identify any other planned or reasonably foreseeable projects in the study area in order to describe other predictable demands on available services. No such projects were identified during interviews with local agencies. None of the agencies had received applications from such projects. Therefore, projected population growth was based only on historic trends, as described further in Section 2.1.

The study area for the socioeconomic analysis was determined primarily through interviews with local agency personnel. In addition, a gravity model was used to predict where project workers would reside (see Appendix A). The model estimates residence distribution based on the relative size of each community and its commute distances from the project site. Community population size is assumed to reflect the number and type of amenities available in a community. Gravity model coefficients were used to reflect Electric Power Research Institute (EPRI) case studies of power plants, which reported findings that construction workers tend to drive further distances in order to have access to more amenities, bypassing smaller towns for larger communities within a certain distance range.

The two cities included in the primary study area for detailed socioeconomic analysis are Elko and Wells. A less detailed analysis of Jackpot, West Wendover, and Twin Falls, Idaho is provided in Sections 2.7 and 3.7. This analysis is less detailed because these communities are anticipated to receive fewer impacts. Twin Falls is a large city that would have little difficulty in accommodating project workers and families. Jackpot and West Wendover are relatively small, distant from the project site, have no housing vacancies, and would likely not attract a significant number of workers. Figure 2-1 presents the communities considered in the socioeconomic analysis.

Oasis, Contact, and Montello were excluded from analysis because each is unlikely to gain more than a few residents if the project were implemented. Oasis is located at the junction of Highway 80 and State Route 233. It is unlikely that workers would choose to live in Oasis with approval of the proposed action or Brush Creek alternative because the access road would make Oasis twice the distance from the project site than Wells would be. If the Moor Summit access road were constructed instead, Oasis and Wells would be equidistant from the project site. The model indicates that the majority of workers would probably still choose to live in Wells. However, some workers could reside in the Oasis Mobile Home Park, which consists of 48 lots that are currently 25 percent occupied (King 1988). The communities of Contact and Montello might experience a slight population increase if the access road alternative chosen were the one at Moor Summit, but their small size and greater distance from the project site would likely not attract any significant number of workers.

2.1 POPULATION

The State of Nevada gained 311,000 new resident from 1970 to 1980, which was the fastest growth rate for any state in the nation (63.8 percent) during that time period. Growth continued strong into the 1980s with a net gain of 295,372 new residents and a growth rate of 36.9 percent from

Figure 2-1. COMMUNITIES WITHIN 100 MILES OF PLANT SITE

1980 to 1988. This growth rate was second only to that in the State of Alaska. This strong population growth has generally been due to a migration of new residents into the state, rather than through internal growth (the net increase of births to deaths) (State of Nevada 1988).

Significant growth occurred during the 1980s in several rural counties. From 1980 to 1987, Elko, Humboldt, Lyon, and Nye counties all experienced population growth at a rate near or above 30 percent. With the exception of Lyon County, which is a bedroom community to the state capitol of Carson City, the growth can be primarily attributed to the expansion of Nevada's gold mining industry (State of Nevada 1988).

The growth in Elko County is associated with gold mining in the Carlin Trend. Population growth has occurred mainly in the incorporated areas of Carlin and Elko. Workers and their families arrived in the area after hearing of jobs associated with the mining and mill construction. The population of the City of Carlin doubled in the last 1.5 to 2 years, primarily as a result of gold mining and associated services (Trousdale 1989).

Elko County's population increased by 7731 residents to 25,000 between 1980 and 1987. This represents the largest population gain by any rural county in Nevada during this period. Table 2-1 presents population data for Elko County and the State of Nevada. Preliminary population forecasts were made by the University of Nevada-Reno, Bureau of Business and Economic Research, in cooperation with the Governor's Office of Community Services in 1988.

Population estimates and projections made by different agencies often differ. The 1988 population, estimated by the State Department of Taxation to be 26,790, already exceeds University of Nevada-Reno's projection of 26,290 for Elko County population in 1990. Furthermore, Elko County views this estimate as low. In December 1988, the county petitioned the Department of Taxation to increase preliminary population estimates for

Table 2-1. HISTORIC AND FORECAST POPULATIONS FOR ELKO, WELLS, ELKO COUNTY, AND THE STATE OF NEVADA

Year	City of Elko	City of Wells	Elko County	State of Nevada
1970[a]	7,621	1,081	13,958	488,738
1980[a]	8,758	1,218	17,269	800,508
1981[a]	9,570	1,310	18,790	850,460
1982[a]	10,060	1,380	19,760	877,380
1983[a]	10,590	1,340	20,770	904,700
1984[a]	10,610	1,300	21,830	932,130
1985[a]	10,800	1,310	22,850	967,820
1986[a]	10,980	1,320	23,920	1,008,030
1987[a]	13,310	1,300	25,000	1,053,230
1988[a]	14,620	1,400	26,790	1,095,880
1990[b]	N/A	N/A	26,290	1,176,778
1995[b]	N/A	N/A	29,323	1,414,234
2000[b]	N/A	N/A	33,293	1,686,487
2005[b]	N/A	N/A	37,522	1,999,198

[a] July 1 of each year. Source: Nevada Department of Taxation.
[b] Preliminary population forecasts. Source: State of Nevada 1988.

N/A - Not available.

Elko County and the cities of Elko, Wells, and Carlin. Elko County estimated a county growth rate of more than 15 percent from 1987 to 1988, based on increases in school enrollment and utility hookups, to a county population of 28,917 in 1988. The State Department of Taxation estimated the increase at less than 8 percent over the same period. The Department of Taxation rejected the appeals made by Elko County.

Racial characteristics of the population in Elko County and the State of Nevada are shown in Table 2-2. Elko County has a substantially higher percentage of American Indian residents than the State of Nevada as a whole (8.5 percent vs 1.6 percent), and a somewhat higher percentage of residents of Hispanic origin (10.7 percent vs 6.7 percent).

Approximately 70 percent of the households in Elko County in 1980 were family households (Table 2-3). Households are defined as one or more persons that occupy a housing unit. A family is defined as a group that is related by birth, marriage, or adoption. The percentage of family households in Elko County was slightly higher than the statewide rate of 68 percent. In addition, the average numbers of people per household (2.67) and people per family (3.24) were slightly higher than the statewide figures (2.59 and 3.13, respectively). The percentage breakdown of the number of people in Elko County households in 1980 was as follows (Table 2-4): one person (25.3 percent), two people (30.3 percent), three people (16.0 percent), four people (14.4 percent), five or more people (14.0 percent).

2.1.1 City of Elko

Population figures for the City of Elko are presented in Table 2-1. The estimate of the City's 1988 population made by the State of Nevada Department of Taxation is 14,620. This estimate was derived from a vector autoregression model based on historical population, employment, and unemployment data. As mentioned above, Elko County feels that this estimate is low.

Table 2-2. POPULATION BY RACE AND HISPANIC ORIGIN, 1980

Race	Elko County		State of Nevada	
	Number	Percent	Number	Percent
White	14,747	85.4	700,345	87.5
Black	81	0.5	50,999	6.4
American Indian	1,468	8.5	13,308	1.6
Asian and Pacific Islander	106	0.6	14,164	1.8
Other	867	5.0	21,677	2.7
Total	17,269	100.0	800,493	100.0
Hispanic Origin[a]	1,842	10.7	53,879	6.7

[a] Persons of Hispanic origin may be of any race and are tabulated in the racial categories.

Source: State of Nevada 1988.

Table 2-3. HOUSEHOLD RELATIONSHIP AND FAMILY TYPE, ELKO COUNTY AND THE STATE OF NEVADA, 1980

Selected Characteristics	Elko County	State of Nevada
Households		
Persons in Household	16,946	788,317
Total Households	6,350	304,327
Family Households	4,420	207,424
Male-Headed	3,851	172,824
Female-Headed	569	34,600
Nonfamily Households	1,930	96,903
Male-Headed	1,186	55,546
Female-Headed	744	41,357
Persons per Household	2.67	2.59
Families		
Persons in Families	14,334	649,373
Total Families	4,420	207,424
w/children under 18	2,365	103,892
w/children under 6	1,075	26,126
Married Couple Families	3,723	169,632
w/children under 18	1,921	80,475
w/children under 6	936	21,798
Female-Headed Families	480	28,039
w/children under 18	336	18,907
w/children under 6	103	3,336
Male-Headed Families	217	9,753
w/children under 18	108	4,510
w/children under 6	36	992
Persons per Family	3.24	3.13

Source: State of Nevada 1988.

Table 2-4. HOUSEHOLD SIZE IN ELKO COUNTY AND THE STATE OF NEVADA

	Elko County	State of Nevada
Total Households	6477	304,900
One Person	25.3%	24.5%
Two People	30.3%	34.1%
Three People	16.0%	16.8%
Four People	14.4%	13.6%
Five or More	14.0%	11.0%

Source: State of Nevada 1988.

Another estimate of current population was made for the City of Elko as part of a a study for a new wastewater treatment facility. In order to determine design capacity, the City's contractor, Kennedy/Jenks/Chilton (now Chilton Engineering) conducted a population study of Elko and Eureka counties, because employment increases in Eureka County trigger population increases in Elko County. Nonmining growth was estimated at 5 percent. The seven largest gold mines in and adjacent to Elko County were contacted for employment projections. Once population for the two counties was projected, including nonmining growth, mining growth, and mining support services, population for the City of Elko was estimated (Table 2-5). The Chilton Engineering study used the State Department of Taxation 1987 population estimate for the City of Elko of 13,310 as a starting point. The Chilton Engineering estimate of 1988 population for the City of Elko is 16,393, higher by 1773 (12 percent) than the State of Nevada Department of Taxation estimate. Estimates made by the EPA on City of Elko population, based on sewer usage which will include motel and RV residents, have been as high as 30,000 in 1989 (Klein 1989). For the purpose of this socioeconomic analysis, a 1988 population of 16,000 in the City of Elko will be assumed.

In order to project the existing population into the future, population growth is assumed to grow at pre-mining boom rates. Conversations with local officials have indicated that many mining construction activities are nearing completion and that population increases (seen in 1987-1989) will level off. The leveling-off will be as a result of the departure of construction workers and the arrival of more operation workers. The average annual growth rate in the City of Elko between 1980 and 1986 was 3.8 percent. Applying this rate to a 1988 population of 16,000, population is projected to be 19,300 in 1993 and 25,000 in 2000 (Table 2-6). The projected population in 2000 is similar to that found in the Chilton Engineering study.

Table 2-5. CITY OF ELKO POPULATION PROJECTIONS, CHILTON ENGINEERING STUDY

Year	Population	Increase	Percentage Increase
1987	13,310[a]	2,330	21.2
1988	16,393	3,083	23.2
1989	18,156	1,763	10.8
1990	19,397	1,241	6.8
1991	20,090	693	3.6
1992	20,781	691	3.4
1993	21,268	487	2.3
1994	21,644	376	1.8
1995	22,317	637	3.0
2000	25,685		3.0

[a] Actual

Source: Wastewater Facilities Planning Treatment Plant Expansion, 11-7-88. Kennedy/Jenks/Chilton (now Chilton Engineering).

Table 2-6. PROJECTED POPULATION IN CITIES OF ELKO AND WELLS

City	1988	1993	2000	2010
Elko[a]	16,000	19,300	25,000	36,300
Wells[b]	1400	1490	1630	1860

a Assumes an average annual growth rate of 3.8 percent of current population

b Assumes an average annual growth rate of 1.3 percent of current population.

No racial breakdown of the City's population is available. Approximately 800 American Indians reside in the City, most on the Elko Indian Colony. City officials estimate that the number of residents of Hispanic origin is approximately 10 percent.

2.1.2 City of Wells

Population figures for the City of Wells are presented in Table 2-1. The State of Nevada Department of Taxation estimate for 1988 is 1400 residents, a figure considered low by Elko County, as mentioned above. If the State's estimate is correct, Wells has grown approximately 15 percent since 1980.

Using a similar method to project population as that method used for Elko (Section 2.1.1), the average annual growth rate in Wells between 1980 and 1986 was 1.3 percent, and population is projected to be 1490 in 1993 and 1630 in 2000 (Table 2-6).

No racial breakdown of the City's population is available. Staff of the Wells Band of Te-Moak Tribes estimates that fewer than 100 American Indians reside in Wells, most on the Wells Indian Colony. City officials estimate that the number of residents of Hispanic origin is less than 10 percent.

2.2 EMPLOYMENT AND INCOME

In the early 1980s, Nevada's economy experienced the effect of the national recession. Between 1979 and 1982, nonagricultural employment growth was held to an annual rate of 1.9 percent. Since then, however, the number of jobs in Nevada has been increasing at an annual rate of 4.4 percent (State of Nevada 1988).

Nevada's economy is dominated by the service industry, primarily in the hotel, gaming, and recreation sectors. Significant growth in these areas

has occurred in the Las Vegas area and in border towns such as Wendover in northern Nevada and Laughlin in southern Nevada. The percentage of service industry jobs in Nevada increased to 44.4 percent in 1987, compared to 23 percent nationwide (State of Nevada 1988). The five largest employers in Elko County are Red Lion Hotel and Casino (Elko), Cactus Pete's Hotel and Casino (Jackpot), Stateline Hotel and Casino (Wendover), Elko School District (Elko), and Freeport Gold Mine (Elko) (George K. Baum & Company 1989).

One employment sector that has seen an increase in jobs during the 1980s is mining, due to the increase in gold mining in many counties. Eight counties in Nevada each have more than 10 percent of the workforce employed in mining. As shown in Table 2-7, Elko County had over 7 percent, or 770 jobs, of the nonagricultural workforce employed in mining during 1985 and 1986 (State of Nevada 1988). Since that time, gold mine production has increased dramatically. The last estimate produced by the Elko Chamber of Commerce was a workforce of 12,940 in January 1987. The job market estimate in the County for 1989 was approximately 13,020, including a total of 1050 mining jobs and 1300 construction jobs.* The estimated number of jobs has increased more than 22 percent between 1986 and 1989, primarily in the mining and construction sectors.

The unemployment rate in the State of Nevada has been steadily decreasing over the past year to reach the lowest rate since March 1979. The seasonally adjusted rate for November 1988 was 4.4 percent. This had decreased from 4.7 percent in the previous month and from 5.9 percent from 1 year prior. The number of Nevadans unemployed in November 1988 was 25,600 (Wells Progress 1989b). The number of unemployed persons in Elko County in 1987 was 830, for an unemployment rate of 6.4 percent (State of

* In addition to mining employment in Elko County, approximately 2630 additional miners commute from the Elko area to mines located out of the county (NENDA 1989).

Table 2-7. PERCENT DISTRIBUTION OF ESTABLISHMENT-BASED INDUSTRIAL EMPLOYMENT, ELKO COUNTY AND THE STATE OF NEVADA, 1985 AND 1986

	Elko County			State of Nevada	
	1985	1986	1988	1985	1986
Mining	7.3	7.0	8.0	1.4	1.4
Construction	5.7	5.4	10.0	5.3	5.9
Manufacturing	1.4	1.2	1.1	4.9	4.8
Transportation and Public Utilities	7.2	7.1	5.6	5.7	5.7
Trade	16.7	17.0	18.0	20.4	20.3
Finance, Insurance, and Real Estate	2.6	2.8	2.3	4.8	4.5
Services	42.0	42.3	40.0	44.0	44.1
Government	17.1	17.2	15.0	13.5	13.2
Total Employment (annual average)	10,570	10,650	13,020	445,800	468,100

Note: Reflects nonagricultural employment by place of work. Does not necessarily coincide with labor force concept. Includes multiple jobholders.

Sources: State of Nevada 1988
Clarke 1989

Nevada 1988). The most recent seasonably adjusted unemployment rate estimate (July 1989) in Elko County is 6.3 with 800 unemployed persons (Clarke 1989).

At an estimated $15,445, per capita personal income in Nevada ranked above the national average of $14,636 in 1986. Elko County's figure for the same time period was $13,421, about 15 percent below the state average (Table 2-8).

The Bureau of Business and Economic Research conducted a survey to determine the most likely place of purchase for Elko County residents. All of the grocery, bank, medical, and entertainment purchases were in the County. The major purchases were divided between Elko County (33 percent), Salt Lake City (17 percent), and Twin Falls, Idaho (50 percent) (Bureau of Business and Economic Research 1983).

2.2.1 City of Wells

The City of Wells conducted an employment survey in September 1988, which described employment from October 1987 through September 1988. The survey consisted of a poll of 395 residences. Of these, 361 households responded, for a participation rate of 91 percent. The targeted workforce for the survey was between the ages of 18 and 65 years. Out of the polled population of 998, 560 persons were in the targeted workforce. The purpose of the survey was to determine the number of people who are employed in Wells, employed outside of Wells, or unemployed. An unemployed person is described as a person:

- Who is currently residing in the City of Wells, is unemployed, and actively seeking work, or

- Who is currently residing in the City of Wells and is commuting at least 50 mi to work and also has expressed a willingness and preference that he/she work in Wells if the opportunity arises

Table 2-8. PER CAPITA PERSONAL INCOME IN ELKO COUNTY AND THE STATE OF NEVADA (in dollars)

Year	Elko County	State of Nevada
1980	10,932	11,421
1981	11,650	12,366
1982	11,576	12,477
1983	11,861	12,934
1984	12,814	13,832
1985	13,007	14,701
1986	13,421	15,445

Source: State of Nevada 1988.

Over the course of that year, the monthly average number of persons working in Wells was 504. Approximately 10 percent of the workforce responded that they were available for employment in Wells. This included a monthly average of 42 persons who were commuting out of Wells for employment and 14 who were seeking work. The study also found that there has been a substantial out-migration of young workers, particularly those recently graduated from high school (City of Wells 1988).

The five largest employers in the City of Wells are Four Way Casino, Ranch House Casino, Wells Rural Electric Company, Digrazia, and City of Wells (George K. Baum & Company 1989).

The City of Wells conducted an income survey in February 1987 for the purpose of determining eligibility for money under federal and state programs. The residents were asked whether their total family income was above or below the set incomes for their size family. The threshold incomes were those set by the State Office of Community Services as low income levels and were as follows:

- 1 person - $14,500
- 2 people - $16,550
- 3 people - $18,650
- 4 people - $20,700
- 5 people - $22,000
- 6 people - $23,300
- 7 people - $24,600
- 8 people - $25,900

The study had responses from 269 households in Wells. Of these, 142 households (53 percent) were below their respective threshold income level and 127 were above (City of Wells 1987).

2.3 HOUSING

2.3.1 City of Elko

The housing supply in the City of Elko is currently unable to meet the demand for housing by workers associated with gold mining in the Carlin Trend district. Rapid construction of housing units has occurred recently, but the new units are not sufficient to accommodate the increased demand. As of April 1988, the total housing stock consisted of 3883 housing units, including 947 apartments and 736 mobile homes (Lipparelli 1988). A list of the apartment complexes containing more than 10 units is provided in Table 2-9.

The housing shortage has resulted in people with jobs living in cars parked on private property, federal land, or in parking lots; in motels; in tents; or in overcrowded conditions. Rental units and RV spaces are in the highest demand, with houses for sale being more available. However, many workers have relocated from depressed areas and have been unable to sell their houses in those areas. In addition, the waiting period required for a loan does not offer the necessary quick solution (Lenz 1988). The mining companies have acquired existing housing units and developed new units in order to accommodate their new workers.

Residential construction in the City of Elko and the surrounding areas had been steady for the past several years (Table 2-10). However, in 1988 and 1989, developers recognized the need for housing and responded with increased construction. The City of Elko also responded by making necessary changes to City utilities to increase available capacity. Building plans for the 1988 construction season were extensive. For example, the total listed valuation of projects receiving building permits in the City of Elko in September 1988 was $4.6 million, compared to $813,600 in September of the previous year. Plans submitted to the City of Elko by late July 1988 for that construction year were for 256 houses, 256 apartments, 238 mobile home spaces, and 140 recreational vehicle hookups.

Table 2-9. APARTMENT COMPLEXES IN CITY OF ELKO, NEVADA (10 OR MORE UNITS IN SIZE)

Name	Number of Units	Special Status[a]
Aspen Heights Assoc.	20	Senior-Subsidized
CG Properties	120	Newmont
Cimarron Assoc.	28	Senior-Subsidized
College Park Apts.	49	
Country River	42	
Dotta Drive Assoc.	28	Family-Low Income
Charles Ellison	14	
Diana Arms	52	Family-Low Income
Green Acres	40	Senior-Subsidized
Mark Hooper	10	
Merlin McColm	12	
The Pines	12	
Edythe Rahas	12	
Riverview Apts	56	
Ruby Mtn. Investment	28	Family-Low Income
Sunrise Apts.	24	Family-Low Income
The Willows	48	
Double C Apts	16	

Note: As of April 30, 1988
Source: Lipparelli 1988

Table 2-10. HISTORIC RESIDENTIAL CONSTRUCTION IN CITY OF ELKO AND ELKO COUNTY[a]

	City of Elko[b]	Elko County[c]			
		Spring Creek	Jackpot	W. Wendover	Total County
1985	176	34	40	296	387
1986	46	22	0	46	82
1987	192	24	1	35	60
1988	290	78	0	19	143
1989	410[d]	344	0	20	412

[a] Houses, apartments, and mobile homes

[b] Source: City of Elko, Fire and Building Departments 1989

[c] Source: Elko County Building Inspection Division of Department of Engineering Services 1989

[d] Building permits were issued for 410 units during the period of Jan. 1 - early March and April 1 - Sept. 7, when building moratoriums were not in effect.

Of these, building permits had actually been issued for 21 houses and 128 apartments. In addition, approximately 120 permits were issued for houses and mobile homes in the unincorporated areas of Elko County.

Table 2-11 presents a list of planned developments for 1988 that had reached the public hearing stage in the permit approval process. The public hearings are required if conditional use permits are required or if the development is a subdivision. Specific projects at that stage included:

- 80 additional apartments near the 128 existing apartments planned by a division of Newmont Gold Company
- 18-unit and 30-unit apartment complexes by Group West Development
- 152 mobile home spaces at Southgate Mobile Home Park
- 86 mobile home spaces at Sage Hills II
- 89 homes in 1988 and 110 in 1989 in the Mountain View Estates, planned by Barrick Goldstrike Mines, with a majority of the homes occupied by Barrick workers
- Development of 195 lots in the Bluff's subdivision in phases of about 10 units, planned by the Great Basin Partnership.

Most of these units were built by the beginning of 1989.

The City of Elko became restricted in the ability to issue additional building permits in early March 1989, due to the limits of the existing sewer capacity of 2.5 million gallons per day (mgpd). This restriction did not affect construction in the nearby community of Spring Creek, which utilizes septic systems instead of the City sewer system. The City received a consent order from the Nevada Department of Environmental

Table 2-11. CONSTRUCTION IN 1988 IN CITY OF ELKO, NEVADA

	Units Planned for 1988	Total Units Planned
Have Required Conditional Use Permit		
North VII Sub., Unit #2	14	14
North Hollow Estates	26	77
Culley/Stitzel	--	75
Southgate Estates	--	25
Hills Sub	--	110
Cimarron West M.H. Park	7	13
Southgate M.H. Park	171	171
West Inc. M.H. Park	--	154
Sage Hill II M.H. Park	86	86
M. Churchfield R.V. Park	124	124
Subtotal	428	849
Have reached final stage of subdivision process		
Eastland Hills Sub., Unit #4	39	39
Suncrest Sub., Unit #1	25	46
Bluff's Sub., Units #1, #2	20	195
Northside Village Sub, Unit #8	12	32
Mountain View Estates, 1 & 2	200	200
Subtotal	296	512
Have Required Conditional Use Permit		
Newmont Apartments	208	208
Groupwest Development Apts.	48	48
Gram Corp. Apts.	48	208
Subtotal	304	464
TOTAL	1028	1825

Source: Lipparelli 1988.

Protection (NDEP) in Carson City. The order specified that if the Elko City Council committed to the construction of two percolation ponds (3A and 3B), which would increase the sewer system capacity by 200,000 gallons to 2.7 million gallons, the City could issue additional building permits up to the increased capacity. The approval of the percolation ponds was granted and construction of the ponds was scheduled for completion by August 1 (Lipparelli 1989). The housing moratorium was lifted between April 1 and August 9, 1989. During that time, building permits were issued for 168 single-family units, 112 apartments, and 61 RV spaces to be supplied by the capacity of the percolation ponds. Another moratorium was issued August 9, 1989. During the moratorium, building permits can be issued, but occupancy permits cannot be issued until Phase I of the sewer project is completed (in February or March 1990). During August 1989, building permits for 83 single-family units and 25 spaces were issued and await occupancy permits (Windburn 1989). In addition, plans have been submitted for 163 apartments and a 61-unit inn. The recent increase in residential construction in the City of Elko and the Spring Creek subdivision have combined to accommodate almost all of the mine construction workers, according to City officials (Klein 1989). Residential construction will need to continue as construction workers living in RV parks leave the area and mine operation workers arrive, seeking permanent living facilities (Klein 1989). Detailed discussion of the City of Elko sewer system is provided in Section 2.4.7.

For the purpose of this socioeconomic analysis, the number of housing units in Elko in late 1989 will be 5200, including those recently constructed or planned for construction. Using the existing average household size of 3.3, an additional 1000 units by 1993 and 2700 units by 2000 will be required to accommodate additional population growth in Elko, regardless of whether the power plant were built or not (Table 2-12).

2.3.2 City of Wells

The current number of housing units in the City of Wells is difficult to actually determine but is estimated to be around 500. The City

Table 2-12. PROJECTED HOUSING IN CITIES OF ELKO AND WELLS[a]

	1988[b]	1989	1993	2000	2010
Elko	4900	5200[c]	6200	7900	11,350
Wells	500	500	530	580	660

a Household size estimated using 1988 housing figures.
b Current housing units.
c Current housing units plus those associated with percolation pond capacity.

conducted an employment survey in September 1988 and the surveyors contacted 395 households. Another way to estimate residences is to estimate the number of utility hookups. The number of residential water users in the City of Wells is 538 (Tripp 1989). In February 1987, the City conducted what is informally known as a "windshield survey" in order to count the number of existing housing units. At that time, a total of 471 households were counted, with 394 seemingly occupied and 77 which appeared vacant for a vacancy rate of 16 percent. Currently, there are no vacancies in the City of Wells (Yan 1989).

A survey of the number of rental units in the City of Wells and the occupancy rates was conducted in March 1989. The results of the survey are presented in Table 2-13. The occupancy rate in the summer months was 95 percent but dropped to 62 percent in the winter months. Vacant rental spaces in the summer months consisted of four apartments and six trailer spaces.

Fifteen hotels and motels are located in the City of Wells. Table 2-14 describes the number of units and the occupancy rates. The motels are almost fully occupied during the summer but have rooms available in the winter months. Daily room rates are approximately $15 for the hotels and range from $21 to $32 for the motels.

Private developers have been formally proposing housing developments in Wells. The City has created a 66-lot subdivision that already has sewer and water services to the area. In Spring 1989, the Wells City Council approved a 120-space mobile home park adjacent to the planned industrial park. However, the approval of the mobile home park is contingent on the development of sewer service, storm drains, and access roads to the industrial park, so that the mobile home park can easily connect to services. Figure 2-2 shows the location of the planned industrial park and the mobile home park. The utility services require a loan from Economic Development Association (EDA), as well as matching funds. The matching funds have been raised through a state loan. EDA will make the decision on

Table 2-13. RENTAL UNITS IN CITY OF WELLS, NEVADA

Name	Total Units	Apts	Homes	Trailers	Trailer Spaces	Occupancy Summer	Occupancy Winter
Anderson Trl. Crt.	20				20	20	8
Brough	3			3		3	3
Don Cooper	4			3	1	4	2
Chuck Corbe	2		1	1		2	2
D&C Trl. Crt.	5				5	5	2
E&A Trl. Crt.	4				4	4	4
Hyde Trl. Crt.	14				14	12	4
Johnny's Trl. Crt.	8				8	8	6
Lake Rd. Trl. Crt.	5				5	5	3
Maranatha Trl. Crt.	10				10	10	2
Gary Moore	3			3		3	3
Nannini Trl Crt.	4				4	4	4
Mike Nannini	4	4				3	2
Oxley's Trl. Crt.	3				3	3	1
Bill Rodriguez Trl. Crt.	5			4	1	5	4
Bill Rodriguez Apts.	4	3	1			4	4
Rick Sharp	1	1				1	1
Scott Taylor Apts.	7	7				7	5
Pat Taylor Apts.							
Antje Weeks	4			1	3	4	2
Skip Zander	1			1		1	1
Brough Trl. Crt.	2			2		2	2
Gibbs Trl. Crt.	4				4	4	4
Gerbers Trl. Crt.	9				9	5	3
Frontier Apts.	12	12				9	5
Pius Noz	3				3	3	3
Agee Apts	4	4				4	3
Nevada Rural Housing	10	10				10	10
Trail 40 Corp.	5	2		3		5	4
J. Eriksen	4	4				4	4
Ruby Mt. Realty	1		1			1	1
W. Linnell	1		1			1	1
TOTAL	166	47	4	21	94	156	103

Note: As of March 10, 1989
Source: Tripp 1989

Table 2-14. HOTELS AND MOTELS IN CITY OF WELLS, NEVADA

Name	Number of Units	Occupancy[a]	
		Summer	Winter
Big Pillow	23	N/A	Closed
El Rancho	5	Ready for occupancy	Spring 1989
Lone Star	10	100%	87%
Motel 6	122	98%-100%	35%
Old West Inn	40	Remodeling	
Overland Hotel	20	100% (weekly or monthly)	
Ranch House	57	100%	50%
Sage Motel-Best Western	24	100%	50%
Sharon Motel	11	100%	35%
Standard Motel	8	100% (monthly)	
Shell Crest Motel	12	97%	30%
Snor Have Motel	14	N/A	Closed
Wagon Wheel Motel	19	75%	25%
Chinatown Motel	20	100%	15-20%
Victory Motel	14	100% (monthly)	

N/A - Not Available

[a] Winter months: Nov. 1 to April 30
Summer months: May 1 to Oct. 31

Source: Tripp 1989

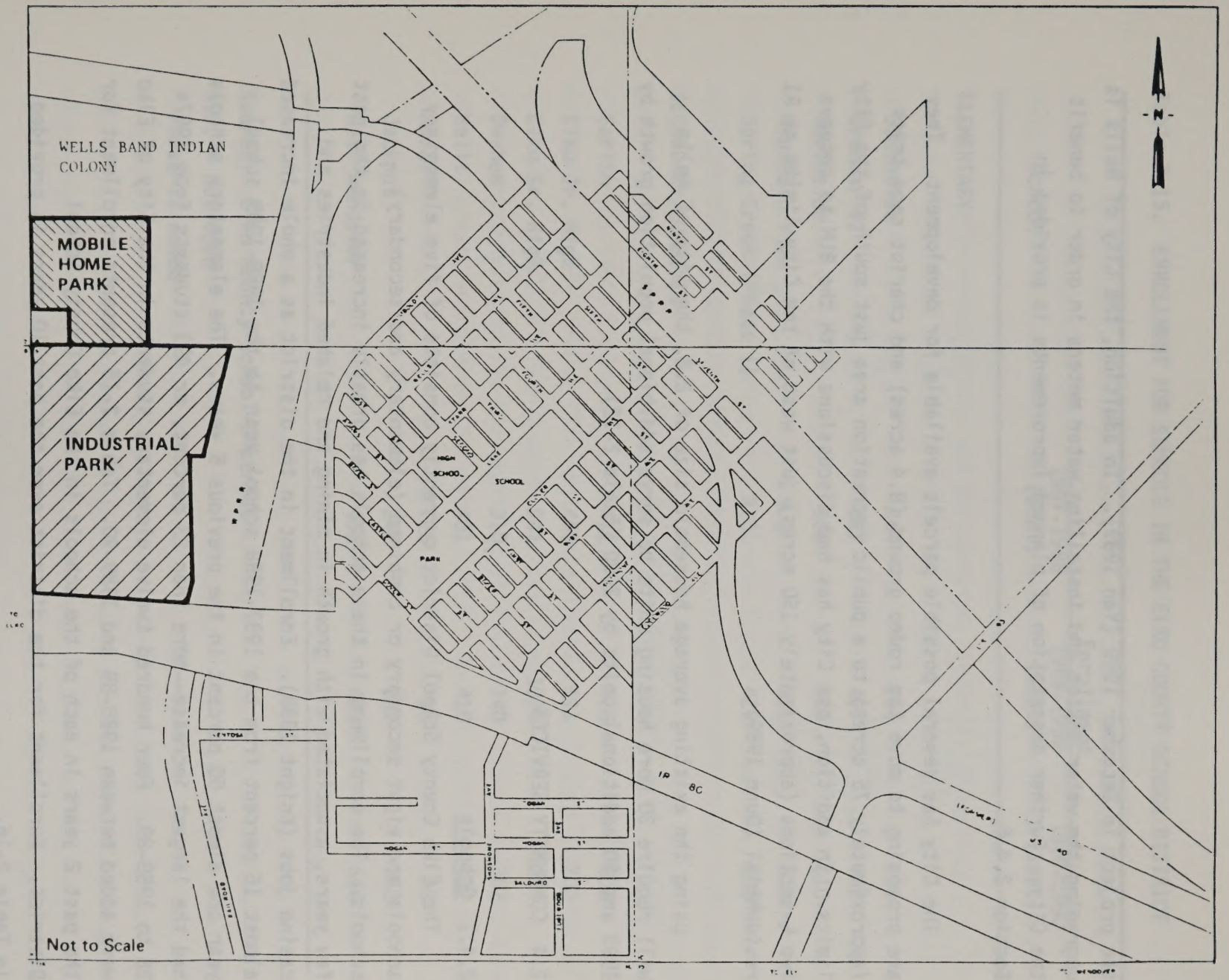


Figure 2-2. LOCATION OF PLANNED INDUSTRIAL PARK AND MOBILE HOME PARK, WELLS, NEVADA

the project in December 1989 (Yan 1989). In addition, the City of Wells is upgrading the water system and installing water meters in order to benefit the City. Further description of planned improvements is provided in Section 2.4.6.

The City has several possible parcels available for development. They are proposing to move the rodeo ground (8.4 acres) and chariot race track (approximately 75 acres) to a public recreation area just south of the City limits. In addition, the City has had discussions with the BLM to reserve two ¼-sections (approximately 150 acres) just west of the City limits as R1 residential (Dunn 1989).

Using the existing average household size of 2.8, the City of Wells will require 30 more housing units to serve additional population growth by 1993 and 80 additional units by 2000 (Table 2-12).

2.4 COMMUNITY SERVICES

2.4.1 Schools

The Elko County School District currently consists of five elementary schools and eight secondary or combined (elementary and secondary) schools. The enrollment in these schools has greatly increased in the past few years, associated with growth in mining and related industries and casino jobs (Knight 1988). Enrollment in the district as a whole increased almost 16 percent from the 1987-1988 school year to the 1988-1989 school year and almost 50 percent in the previous 5 years. The elementary schools had the largest increase--more than 23 percent, or 493 students from 1987-88 to 1988-89. Four hundred twelve elementary students in the City of Elko were added between 1988-89 and 1989-90. Table 2-15 presents enrollment for the past 2 years in each of the schools in the Elko County School District. Enrollment for the district over the past 10 years is provided in Table 2-16.

Table 2-15. ENROLLMENT FOR SCHOOLS IN THE ELKO COUNTY SCHOOL DISTRICT

School	Enrollment 1987-1988 (Sept)	1988-1989 (Sept)	1989-1990 (Sept)
ELEMENTARY			
Southside	864	764	705
Grammar #2	597	497	452
Northside	666	569	510
Mountain View	N.O.	361	530
Spring Creek (Phase I)	N.O.	429	835[a]
SECONDARY/COMBINED			
Carlin	411	476	508
Elko Jr. High	469	591	730
Elko Sr. High	941	1074	1233
Owyhee	310	340	362
Wells	401	410	432
Rural	116	95	98
Jackpot	242	249	262
West Wendover	453	490	544

Source: Elko County School District

N.O. = Not Open

[a] Phase II added

Table 2-16. HISTORICAL ENROLLMENT IN THE ELKO COUNTY SCHOOL DISTRICT

School Year	District Enrollment
1980-81	3985
1981-82	4045
1982-83	4175
1983-84	4134
1984-85	4274
1985-86	4645
1986-87	5002
1987-88	5474
1988-89	6346
1989-90	7201

Source: Elko County School District

2.4.1.1 City of Elko. The City of Elko has five elementary schools, a junior high, and a high school. Recent enrollments for these schools are provided in Table 2-15. Enrollment in Southside, Grammar School #2, and Northside Elementary Schools decreased between 1987-88 and 1988-89, with the opening of Mountain View and Spring Creek (Phase I) Elementary Schools. Southside Elementary School has a capacity of 700 and a current enrollment of approximately 700. Six classrooms were added for the 1989-90 school year. Grammar School #2 has an enrollment of 452, approaching its capacity of 500. It is not possible to add trailers to this school site. Northside Elementary School has a current enrollment of 510, below its capacity of 600 after having lost students to the new elementary schools. Mountain View Elementary School, which was opened in April 1988, consists of 12 relocatable trailers, four of which were added for the 1989-90 school year. The current enrollment is 530, with a capacity of approximately 600. Spring Creek Elementary School opened in September 1988 with an enrollment of 430. Phase II of this school opened in January 1989 with an enrollment of 710, already greater than the capacity of 600. Six classrooms were added for the beginning of the 1989-90 school year and two more classrooms are planned for October 1989. Current enrollment at Spring Creek Elementary is 835, with class sizes of 31-32 (Billings 1989).

Elko Junior High School, which includes grades 7 and 8, reached its capacity of 600 in 1988-89. Six classrooms were added at the beginning of the 1989-90 school year and two more classrooms are planned for October 1989. Current enrollment at the Junior High is 730. The current enrollment of Elko Senior High School is 1233, which is well below the schoolroom capacity of 1500. However, the school is at capacity in vocational and science areas. Approximately 85 percent of the Elko Senior High School participates in the vocational programs of auto shop, welding, drafting, electronics, construction, business, home economics, surveying, etc. This level of participation is the highest in the State of Nevada (Knight 1988).

2.4.1.2 City of Wells. The school in the City of Wells is a combined school, which includes the elementary and secondary school. The elementary school (K-8) is currently at capacity with an enrollment of 302. Available capacity exists at the secondary level, which has a current enrollment of 130 and a capacity of 300. The school has 21 relocatable trailers, each with two classrooms. There is space available at the elementary level to accommodate more relocatable trailers (Knight 1988).

2.4.1.3 Enrollment Projections. The Elko County School District calculates estimated future enrollments based on projections of births in the county and survival rates of students in each grade. The most current projection utilized the base year 1988-1989. The projected enrollment for the following school year (1989-1990) is an increase of approximately 500 students. However, the school superintendent believed that the growth would be between 800 and 1000 students next year based on the growth that the school district has recently experienced as a result of the gold mining boom. This recent growth is not reflected in school district's projection model (Knight 1988). The actual increase was approximately 800 students, as the school superintendent projected.

To estimate growth in school enrollment associated with non-project-related growth in Elko and Wells, current ratios of students to population were applied to projected growth. In the City of Elko, the projected enrollment increased from the 1989-90 enrollment of 4995 to 5951 in 1993, 7336 in 2000, and 10,273 in 2007 (Table 2-17). The projected enrollment in Wells increased from 432 currently to 458 in 1993, 499 in 2000, and 565 in 2007. Elko County School District will need to add classrooms and schools to accommodate this population growth because available capacity does not exist.

2.4.1.4 Funding. The Elko County School District receives monies from several sources. The approximate current breakdown of funding sources is state (52 percent), federal (10 percent), and local (38 percent) (D. Harris

Table 2-17. ADDITIONAL STUDENTS ASSOCIATED WITH NON-PROJECT-RELATED GROWTH IN CITIES OF ELKO AND WELLS[a]

City	1988	1993	2000	2010
Elko	4995	956 (total = 5951)	2341 (total = 7336)	5278 (total = 10,273)
Wells	432	26 (total = 458)	67 (total = 499)	133 (total = 565)

[a] Assumes current ratios of students in each city to that city's population, applied to projected population.

1989). Revenue is received from the State Distributive School Fund, based on the number of students in the school district. The allocation of money during the 1988-1989 school year is $3068 per pupil (D. Harris 1989). This money is supplemented by ad valorem taxes at a tax rate of $0.75 per $100 of assessed property value. In addition, the district receives federal assistance under Public Law 81-874. This law distributes money for children whose parents live and/or work on federal property. These monies combine to form the General Fund, which consists of monies to support operating costs.

The Elko County School District also receives revenue for the Capital Projects Fund. A portion of the ad valorem tax is allocated to school capital projects. The rate was $0.25 per $100 assessed property value. This rate increased to $0.50 per $100 assessed value, effective July 1, 1989 (D. Harris 1989). This money is collected in a "pay-as-you-go" fund. A new capital project cannot be started until all the money required to pay for it has been collected in the fund. For that reason, capital projects are often phased. Another source of money for the Capital Projects Fund is money generated by the Motor Vehicle Privilege Tax, which is gathered as part of vehicle registration in the state. The Capital Projects Fund may be used for capital projects such as renovations, roof replacements, or construction of new schools.

2.4.2 Law Enforcement

The Elko County Sheriff's Department employs 20 road officers and has approximately 15 vehicles. The Sheriff's Department facility is located in the City of Elko. Response time from Elko or Jackpot to the Thousand Springs area is estimated to be 45 minutes. There is one deputy located in Wells that could respond in approximately 30 minutes (Walker 1989). The Sheriff's Department has a cross-deputization program with the Sheriff's Department in Twin Falls, Idaho, and Wendover, Utah. There is also a mutual aid radio channel that is used by the county (N. Harris 1989).

In Spring 1989, Sheriff Jim Miller requested that Elko County provide funding for an additional five officers. This is a result of the increase in crime in Elko County in the last year. Crime increased 25 percent, accidents increased 63 percent, misdemeanor arrests increased 25 percent, felony arrests increased 134 percent, and civil process increased 45 percent (Tilley 1989).

2.4.2.1 City of Elko. The City of Elko has a police department that consists of 25 police officers and reserve officers, a police chief, animal control officer, and six sheriff's officers. The Department has funding for three additional officers in July 1989. The Department owns 12 police vehicles and two vehicles used for animal control. The police station is adequate in size as a result of the Department's recent move into a new building. The response time is estimated to be 3 minutes within the City limits (Forbes 1988).

The service ratio of 31 officers to a current population of 16,000 is equal to 1.9 officers for each 1000 residents. A typical service ratio is 1.5 to 2.0 officers for 1000 residents (Leistritz and Murdock 1981). The service ratio would be 1.6 in 1993 and 1.2 in 2000, if additional officers are not hired for the increase in population. The City would need to hire six officers by 1993 and 17 officers by 2000 to maintain the current service ratio.

2.4.2.2 City of Wells. The City of Wells employs five full-time officers and one Elko County Sheriff's Deputy. The number of full-time officers is the minimum number required to offer 24-hour protection. The department also has four paid reserve officers who are used to fill vacancies. The reserve officers are also employed in other jobs, which restricts their availability for filling in when needed to accommodate sick leave and vacations. There are four primary vehicles, plus one 4-wheel drive vehicle and an additional vehicle that is used on occasion. The response time to the older part of town is estimated to be less than 2 minutes, while

response to the newly annexed area could be up to 4 minutes. The Police Department would like to add one more officer, but the City does not have the funding. It would also like to have one vehicle for each full-time officer because that arrangement has been found to reduce maintenance costs (Dunn 1988).

The current service ratio is 4.3 officers for each 1000 people, which is substantial coverage. This would decrease to 4.0 in 1993 and 3.7 in 2000 with population growth.

2.4.3 Fire Protection

2.4.3.1 City of Elko. The City of Elko has 15 full-time and 20 volunteer firefighters, including a new inspector (NENDA 1989). The fire department has seven vehicles, including a new mini-pumper received in September 1989. The Department is currently requesting a 75-foot ladder truck. It will be requesting three additional full-time firefighters in July 1990 (Cash 1989). All fire department personnel are trained to a level of EMT1 and respond to all emergencies. The department has mutual aid agreements with the Nevada Division of Forestry, the Bureau of Indian Affairs, and the Bureau of Land Management. The agreements specify that the groups will assist outside of their own jurisdictions but recognize that they have first priority to serve their own jurisdictions. The response time is estimated to be from 1 to 7 minutes, depending on whether the call is located close to the fire station or near the City limits (Cash 1988). The fire department has been able to handle all calls associated with the recent increased population except when two calls have arrived at the same time (Cash 1989).

2.4.3.2 City of Wells. The fire department in the City of Wells consists entirely of volunteers. The current number of volunteers is 15 firefighters. The fire station is located at 621 Starr Avenue. The City has informal cooperative agreements with the Nevada Division of Forestry and the City of Elko (Dunn 1988).

2.4.3.3 Service. The method used to estimate increased demand for fire protection services is similar to that used for law enforcement. The number of firefighters is compared to the existing number of dwelling units to establish a service ratio. Currently, the City of Elko has 15 full-time and 20 volunteer firefighters to serve 3900 housing units. Six volunteer firefighters are considered equivalent to one full-time firefighter for insurance purposes. Therefore, the City of Elko has the equivalent of 18 firefighters. This is equivalent to 4.6 firefighters for every 1000 units. By the end of 1989, the Department is projected to have 21 equivalent firefighters for 5200 units for a service ratio of 4.0. The City of Wells has 15 volunteer firefighters to serve 500 housing units, or the equivalent of 5 firefighters for every 1000 residences. Two fire protection personnel per 1000 dwelling units is a typical service standard (Leistritz and Murdock 1981) and will be used in this analysis.

In order to accommodate non-project-related growth, the City of Elko will need to obtain two firefighters by 1993, five by 2000, and 12 by 2010. The City of Wells will need 0.4, 1.0, and 1.9 volunteer firefighters by these same years.

2.4.4 Medical Care

Eight County ambulances serve Elko County, with two each in Elko, Wells, Jackpot, and Carlin. The Elko County Ambulance Service operates with 13 volunteer crew members. There are three units in Wendover operated by a private service. The service area in Elko County covers 500 square miles. Response time within Elko City limits is 6 to 8 minutes. Response time from Wells to the Thousand Springs project site would be approximately 30 minutes. All ambulances deliver patients to the Elko County General Hospital. Travel time from the project site and Wells to Elko would be 90 minutes and 50 minutes, respectively. Travel time from Wendover to the project site would be approximately 95 minutes.

2.4.4.1 City of Elko. The Elko General Hospital has 16 physicians on staff and a 50-bed capacity. Other services provided by the hospital include an intensive care unit, obstetrics unit, full surgical and medical facilities, and ambulance service with 2-way communication with emergency room (NENDA 1989). Renovation of the hospital's Obstetrics wing began in August 1989 and should be completed around the end of the year (High Desert Advocate 1989a).

Elko General Hospital has formed a Physician Recruitment Committee to help attract doctors to the Elko area. The committee was formed in response to the recent local growth and the loss of a few physicians last year. Difficulty in physician recruitment has occurred for two reasons. One reason is a Nevada law which requires that doctors have 3 years of post-graduate training before they can be licensed in the state. Elko County recently was granted an exemption from this law. In addition, it is difficult to attract and retain physicians in a rural area (Hawkins 1989). Currently, the committee is trying to recruit a radiologist, a pediatrician, two family practitioners, an internist, a general surgeon, and an obstetrician. Other specialists including an allergist and a cardiologist may also be recruited.

The Elko Medical Clinic has a staff of approximately 14 physicians with different specializations and a modern, fully equipped laboratory and X-ray facility (NENDA 1989). The physicians at the Medical Clinic are also employed at the General Hospital (Hawkins 1989).

The existing 16 physicians serve a county population of more than 26,000 residents. The resulting service ratio of 0.6 physicians for 1000 residents is below a typical standard of 1.0 physicians for 1000 residents (Leistritz and Murdock 1981). Elko County will need to hire additional doctors to accommodate non-project-related growth. The demand is projected to be four doctors by 1993, nine by 2000, and 20 by 2010.

2.4.4.2 City of Wells. The Wells Medical Center consists of one doctor who is a general practitioner. The nearest hospital is Elko General Hospital, 50 miles away. The existing medical facility is provided to the physician rent-free and is inadequate to provide services, according to the physician (J. Smith 1989).

2.4.5 Libraries

2.4.5.1 City of Elko. The Elko County Library is located in Elko at 720 Court Street near 7th Street. The main branch contains 80,000 volumes; the circulation for the county is 160,000 volumes per year. The circulation of 160,000 volumes for the 26,790 county residents is approximately 6 volumes per person per year. The library system includes branches in Wells, West Wendover, and a station at Tucarora. The bookmobile travels extensively to small communities. There is also a books-by-mail program. The Elko County Library has children's programs available, such as reading, crafts, etc. (Madsen 1988). The facility also has a public meeting room that seats 80 people, and audio-visual services (NENDA 1989). The funding for the library is primarily from the county but there are also funds from the federal and state governments.

2.4.5.2 City of Wells. The Wells Library is a branch of the Elko County Library System and is located in the same building as the City Hall. The library contains 6000 to 10,000 books, but any book within the Elko County Library System can be requested and obtained. The branch library has a summer reading program for children up to the third grade.

The Elko County Library is planning to build a new building for the Wells' branch library. The new building will be 3800 sq ft and will include a meeting room for 40 to 50 people and an area for children's programs. The meeting area will be the same size (900 sq ft) as the present library (Wells Progress 1989a). The development of the new library will be developed through a combination of grants and pledged services. In order to receive a Library Service and Construction Act (LCSA) grant, the

City of Wells needs a $100,000 cash match. This will come from labor provided by the Nevada Department of Prisons, labor pledged by a design engineer, and land pledged by the City (Yan 1989).

The funding for support of this library is primarily provided by the county library system. The City of Wells pays for the power and the telephone.

2.4.6 Water Supply

2.4.6.1 City of Elko. The City of Elko is planning to build two new supply tanks with capacities of 2 million and 3 million gallons. These tanks will bring the total system storage capacity to 14.5 million gallons (Lipparelli 1988). The water supply consists of groundwater. The existing system has a flow capacity of 14 mgpd. The City will be drilling three test wells in Fall 1989. If these wells are developed, they would flow at a rate of 4000-5000 gallons per minute (gpm) (Klein 1989). In addition, the City has planned looping in the distribution system and has sited another storage tank. The peak usage during the summer is 12 mgd with an average usage during the summer months of 10 to 11 mgd. The low usage is during the January and is 3 mgd. When the City's population reaches approximately 20,000, the City will need to add another supply tank and 2 to 3 new wells (Konakis 1989). The flat rate for water service for residential use is $13.50 per month and commercial/industrial use begins at $13.50 per month (NENDA 1989).

2.4.6.2 City of Wells. Water is supplied to the City of Wells by the Wells Municipal Water System. The water supply is comprised of two pumps that pump well water at 1500 (Well No. 2) and 550 (Well No. 1) gpm. The system has a water tank that has a 1.3 million gallon capacity that is kept full. The peak water use is in July and August when usage can reach 2 million gallons per day (Schacht 1988). Water usage is currently two to three times the national average (Yan 1989).

In Summer 1988, some water lines were replaced and some water meters were installed. However, the primary payment schedule is a flat rate charge of $18.00 per month (including $4.00 per month towards bonds) for residential use and a charge to commercial/industrial customers that also begins at $18.00 per month, depending on the type of business (NENDA 1989).

The City of Wells has applied for a Farmers Home Administration loan to conduct a complete upgrade of the water system. The estimated project cost is approximately $1.9 million and includes the obligation of a $1.13 million water bond. The planned improvements are designed to improve and extend the City's municipal water system and include the installation of 22,600 ft of additional and replacement water mains, 127 valves, 29 fire hydrants, and water meters. In addition, the water tank will be repaired and the control unit upgraded, a new well will be drilled on the site of Well No. 1, new pumping facilities will be built, and Well No. 2 will be improved. The majority of the pipeline work will be conducted in 1990, with estimated completion in October 1990 (Yan 1989). Once completed, the new Well No. 1 would pump approximately 1500 gpm (Schacht 1989).

The City Council has proposed the water meters so that residents will be encouraged to conserve water, allowing the existing water system to serve more customers (Yan 1989). The city engineer feels that water usage will decrease because of existing wasteful practices, such as running faucets in the winter so pipes do not freeze and leaky toilets and urinals (Marshall 1989). The Farmers Home Administration has estimated that the average water user will have to pay approximately $23.50 per month for water usage once the water meters are installed. The City estimates the increase would be to approximately $23.00 to $24.00 per month for water usage of 10,000 gallons or less per month to include the new water bond and to create a capital improvements fund. After the water project is completed, the City ordinance will need to be rewritten to include new rates. At that time, the ordinance will be changed so that new water and sewer hookups will be assessed capital fund charges.

2.4.7 Wastewater

2.4.7.1 City of Elko. The sewer service in the City of Elko is provided by the Elko Wastewater Treatment Facility located west of Elko. The existing capacity of the sewer treatment plant is 2.5 million gallons per day (mgd). The fees charged for use of the treatment facility for residential units is a flat rate of $5.25 per month. In addition, residential units are charged $4.50 per month for capital improvements. Sewer connection charges are presently $600. The sewer system currently exceeds biochemical oxygen demand and total suspended solids levels for the use of the effluent to water the municipal golf course (Lipparelli 1988).

In January 1988, the Elko City Engineer estimated that the City had reached the 85-percent capacity level for the treatment facility and would soon be approaching the 90-percent capacity level. At the same time, the Nevada Division of Environmental Protection (NDEP) informed the City that unless it increased the treatment facility capacity before the 90-percent capacity level is exceeded, NDEP would not approve future subdivision proposals. In July 1988, the Elko City Council approved a contract with Chilton Engineering to prepare plans and specifications to improve the City's wastewater percolation ponds and to increase the capacity of the treatment facility.

In February 1989, the City of Elko issued the last building permit associated with the existing sewer system. The City received a consent order from NDEP stating that if the City Council committed to the construction of two percolation ponds (3A and 3B), the City could issue building permits for the additional 200,000 gallons of capacity. The cost of the ponds was approximately $220,000 and the City of Elko had $100,000 in funds. The remainder of the needed money was required from private entities or from loan funds associated with the sewer enlargement project. The approval of the percolation ponds was granted and construction was completed.

The Chilton Engineering study to increase the capacity of the treatment facility analyzed recent population growth of the mining industry specifically and the annual growth of the remaining population. These population figures were projected into the future. On the basis of historical wastewater flows, projected needs for wastewater capacity were estimated. The Chilton Engineering study recommended a three-phase approach to the modification and expansion of the sewer treatment facility. The phases are as follows:

- Phase I consists of an addition to the plant's capabilities, namely a biological tower to dispose of organic matter. Construction is planned for completion in March 1990. Design is for flow of 3.3 million gpd to serve a population of 21,000.

- Phase II includes the addition of pumps and a settling pond to increase the hydraulic capabilities of the facility and the addition of another sludge digester. This would increase the capacity of the existing plant to 3.9 million gpd to serve a population of 25,700. Construction is predicted to be completed in March 1991 but the schedule can be accelerated if required to accommodate unanticipated growth.

- Phase III consists of the development of a second treatment facility in proximity to the existing facility. This plant would be constructed in 0.5 to 1.0 million gpd increments, up to a design capacity of 4.0 million gpd. The total wastewater capacity would then be 8.0 million gpd and could serve a population of 60,000.

The short-term loan for Phase I has been approved. In addition, $600,000 was donated by mining companies to the City of Elko and will be used for the sewer treatment facility expansion. The contract for Phase I has been awarded and construction is scheduled for completion in February or March

1990. The Elko City Council has begun discussions on Phase II of the sewer project (Klein 1989).

2.4.7.2 City of Wells. Wastewater services in the City of Wells are provided by the Wells Wastewater Treatment Facility. This facility was constructed in 1982 and consists of four ponds. Two of the ponds are holding ponds. Water accumulates in the pond during the winter, generally from October to April, and is then used as irrigation water in the spring. The sewer permit with the State Health Department to dispose treated wastewater on 86 acres of irrigated farm land expired in August 1988. Another application has been filed but a new permit has not yet been issued (Schacht 1988). Recent changes to the treatment system include the replacement of the old sewer lines from the plant to town with polyvinyl-chloride (PVC) pipe. In addition, the flow to the treatment facility has been decreased by rerouting flow from basements to the drainage system rather than through the treatment facility.

The City usage is almost at the design capacity of 0.32 mgpd, with a current usage of 0.25 mgpd (Schacht 1989). This has decreased from a usage of approximately 0.30 mgpd before the sewer improvements. The current treatment usage is approximately 180 gpd for each resident. There are no current plans to expand the capacity of the wastewater treatment system (Schacht 1988). The City engineer believes that available capacity in the sewer system will increase with the introduction of water meters. Many residents run water in the winter to keep pipes from freezing, and some commercial users have faulty restroom facilities. With the economic impetus of water meters, previous consumption in these areas, and therefore sewer usage, will decrease (Marshall 1989). The residential rate for sewer service is a flat rate of $14 per month (NENDA 1989).

2.4.8 Solid Waste Disposal

2.4.8.1 City of Elko. Disposal service in the City of Elko is provided by the Elko Sanitation Company. The City owns one landfill. Elko County

controls a landfill for Spring Creek and other county areas near the City of Elko. It has almost reached capacity. There have been discussions to join the City and the nearby county areas into a single landfill district. If the district is formed, the landfills would have available capacity for 3 to 5 years, depending on growth. It will take 3 to 5 years to site and develop another landfill (Klein 1989). Four options are being explored for development of a new landfill, three on BLM property and one on private land. The BLM property would be developed through a Recreation and Public Purposes Lease (Klein 1989). Residential pickup is twice weekly, and a flat rate of $6.50 per month is charged.

2.4.8.2 City of Wells. Solid waste disposal service in the City of Wells is provided by the City of Wells Sanitation Company. Residential pickup by dump truck occurs twice weekly, for a flat fee of $7.00 per month. Solid waste is disposed at a 25-acre landfill located on City of Wells land in the northeast portion of the City. This landfill is nearing its capacity. The City has requested from BLM an additional 36.26 acres adjacent to the existing landfill in order to expand the capacity.

2.5 PUBLIC FINANCE

In 1979, the State of Nevada collected approximately $746 per State resident in revenue, and that increased to almost $1000 per resident in 1987. However, accounting for inflation, the State lost about $100 per resident. This is as a result of high population growth rates and high rates of inflation.

A large percentage of the State's revenues is derived from the collection on gaming winnings. These revenues support nearly half of the State's general fund. In 1987, they amounted to $290 million, levied at a rate of 6 percent, including fees and licenses. Nongaming tax revenues consist of sales tax, the statewide gas tax, cigarette and liquor tax, the drug manufacturer's tax, the estate and lodging tax, and the net proceeds

of mines tax. Nevada has a 6 percent maximum sales tax rate, which includes 2 percent state sales and use tax, 1.5 percent school support tax, 2.25 percent County/City Relief Tax, and the 0.25 percent Mass Transit Tax. The school support tax has 99.5 percent distributed to the counties and cities of origin, while 0.5 percent remains in the general fund. Of the County/City Relief Tax revenues collected, 99.5 percent are distributed to cities and counties with the remainder retained in the State's general fund. The Mass Transit Tax is optional.

The taxable sales in Elko County and the State of Nevada is presented in Table 2-18. The State of Nevada had a much higher rate of growth between 1986 and 1987 than Elko County had (12 percent versus 4 percent), but the growth rates for both entities between 1983 and 1987 were approximately 50 percent.

The historic combined budget figures for counties, school districts, cities, towns, and special improvement districts is presented in Table 2-19. The breakdown of each of the local government budgets for fiscal year 1986-1987 is shown in Table 2-20. Elko County School District controls the biggest portion of the Elko County budget with 38.2 percent. Statewide, the county governments control 39.5 percent of the state budget and school districts have 32.9 percent.

The assessed valuation of both mining properties and total properties in Elko County and the State of Nevada is presented in Table 2-21. Both jurisdictions realized a monumental increase in the assessed value of mining properties between 1982 and 1983, with a 460 percent increase in Elko County. The mining value in Elko County peaked in 1985 at $37,149,000 and is currently at $35,735,010 for fiscal year 1987-88.

Properties' values are assessed by one of two agencies: the County Assessor's Office or the State Department of Taxation. Private properties that are contained within the county are valued by Elko County Assessor's

Table 2-18. TAXABLE SALES IN ELKO COUNTY AND NEVADA, FISCAL YEARS 1983 TO 1987 (THOUSANDS OF DOLLARS)

Year	Elko County	State of Nevada
1982-1983	138,251	6,077,698
1983-1984	166,135	6,762,392
1984-1985	193,097	7,420,774
1985-1986	202,272	7,988,098
1986-1987	210,886	8,974,415

Source: State of Nevada 1988.

Table 2-19. COMBINED LOCAL GOVERNMENT BUDGETS, FISCAL YEARS 1983 TO 1987, ELKO COUNTY AND NEVADA (THOUSANDS OF DOLLARS)

Year	Elko County	State of Nevada
1982-1983	39,713	2,247,411
1983-1984	47,751	1,739,669
1984-1985	47,386	1,676,591
1985-1986	50,368	1,864,418
1986-1987	57,299	1,917,588

Note: Includes combined budget figures for counties, school districts, cities, towns, and special improvement districts.

Source: State of Nevada 1988.

Table 2-20. BREAKDOWN OF COMBINED LOCAL GOVERNMENT BUDGETS, FISCAL YEAR 1986-87, ELKO COUNTY AND NEVADA (THOUSANDS OF DOLLARS)

Budget	Elko County		State of Nevada	
	Dollars	Percent	Dollars	Percent
County	21,182	37.0	757,638	39.5
School	21,876	38.2	630,704	32.9
Cities	8,600	15.0	336,073	17.5
Town	2,971	5.2	10,284	0.5
Special Districts	2,671	4.7	182,891	9.5
Total	57,299	100.0	1,917,589	100.0

Note: Data reflect preliminary budgets adopted May 1, 1986 by each local governmental entity.

Source: Nevada Department of Taxation, 1986-87 Annual Report.

Table 2-21. ASSESSED VALUATION OF MINING PROPERTIES AND TOTAL ASSESSED VALUE, ELKO COUNTY AND NEVADA, FISCAL YEARS 1982 TO 1987 (THOUSANDS OF DOLLARS)

Year	Elko County		State of Nevada	
	Mining	Total	Mining	Total
1981-1982	4,828	219,189	100,003	9,150,959
1982-1983	27,189	245,731	184,599	10,270,890
1983-1984	32,914	339,259	197,959	11,517,454
1984-1985	37,149	314,762	196,965	12,703,198
1985-1986	34,998	360,159	197,613	13,870,623
1986-1987	33,084	388,479	264,086	14,693,751

Source: State of Nevada 1988.

Office. The assessed value is calculated as 35 percent of the value. Property owners can appeal to the State Board of Equalization to change the assessed value. The property tax to be applied to the assessed value is calculated every year. The State of Nevada places a cap on revenues that can be generated from property tax, net proceeds from mines, and supplemental state sales tax (County/City Relief Tax) annually. The amount of revenue can increase by 6 percent for cost-of-living increases. In addition, the State can increase the amount of the revenue limit if there has been substantial growth or construction in the area. In 1988, the Elko County revenue increased 16 percent, allowing 6 percent for cost-of-living increases and 10 percent for growth. The revenue associated with the growth in the area actually lags the growth somewhat (Guisti 1989). Once the allowed revenues are known, the revenue from property tax, net proceeds from mines, and supplemental state sales tax can be estimated. The State Department of Taxation supplies an estimate of sales tax revenue, and estimates are made for net proceeds for mines. Knowing the total assessed valuation in the county, the property tax rate necessary to reach the maximum allowed revenue can be estimated. The property tax rate can be adjusted later if the estimates of the other revenue sources were inaccurate (Salicchi 1988). It can also be increased with voter-approved funding, such as pay-as-you-go measures or bond measures. The 1988-89 tax rates for Elko County, City of Elko, and City of Wells are provided in Table 2-22. The tax rate is applied to each $100 of assessed valuation. For example, a property owner in the City of Elko would pay $2.3619 for each $100 of assessed value of the owner's property.

The Nevada tax commission establishes the valuation for assessment purposes of any property of an interstate and intercounty nature, which must include the property of all interstate or intercounty railroad, telegraph, water, telephone, air transport and electric light and power companies, together with their franchises. The properties are valued by formulas which must take into account, as indicators of value, the company's income, stock and debt, and the cost of its assets. Once the

Table 2-22. 1988/89 TAX RATES IN ELKO COUNTY, CITY OF ELKO, AND CITY OF WELLS

Tax Area	001 County	011 Elko	012 Wells
State	0.0646	0.0646	0.0646
Hosp/Indigent	0.0075	0.0075	0.0075
County	0.2975	0.2975	0.2975
County Debt	0.1220	0.1220	0.1220
Med/Indigents	0.0060	0.0060	0.0060
Jail Operations	0.0562	0.0562	0.0562
South Fork Dam	0.0172	0.0172	0.0172
School District	0.7500	0.7500	0.7500
School Debt	0.2825	0.2825	0.2825
School Capital Projects	0.2500	0.2500	0.2500
TV District	--	0.0119	--
ECCCA	--	0.1639	--
Entity	--	0.3326	0.4101
Total	1.8535	2.3619	2.2636

Source: Elko County Assessor's Office.

property has been valued, the assessed value can be distributed among counties or districts. The most common method of distribution is on a mile-unit valuation basis. The State Legislature has the ability to approve different forms of distribution than that of the mile-unit, with another common method being the allocation on the basis of population in each county. The counties with the larger populations would receive more of the assessed valuation of the project to tax. The Legislature can also approve different distributions for phases of a project; for example, the construction and operation phases. The Property Tax Regulations specify that after establishing the value of a public utility, the commission will segregate the value of any property for which the generation of electricity is not yet put to use. The value of that project must be assessed in the county where it is located. Once the assessed valuation has been distributed, the tax rates of each county and district are applied to the value that has been assigned to it.

The State Department of Taxation has developed cost-to-value conversion factors for each industry to estimate the value of a property during construction. The 1988-89 factor for electric companies is 0.9223. The construction cost is reduced by this factor to determine the value. The assessed value is then calculated as 35 percent of the value (Earhart 1989).

The State has a sales and use tax that is assessed every time an item is purchased at a basic rate of 5.75 percent. Sales tax is assessed if the item is used in the county in which it is purchased. If the item is bought out of the county and/or state, the contractor must pay a use tax that is equal to the foregone sales tax. A portion of the use tax (2.25 percent) stays in the County in which the contractor is registered. The remainder is allocated to the State (2 percent), which then redistributes the money based on population in each county, and the school districts (1.5 percent). In this way, the county in which the materials are used can receive very little tax if the purchaser is registered in another county. The exception to this is in the case of large generating projects. For

these projects, the 2.25 percent portion of the use tax would remain in the county where the project is located.

During the 1987-88 fiscal year (July 1 - June 30), the County of Elko received $9.984 million in revenues, which was $87,000 in excess of the expenditures and expenses. The anticipated revenues for the 1988-89 budget were $9.055 million. Budgeted expenditures and expenses for the same fiscal year are $12.824 million, creating a shortfall during the year's operations of $3.77 million. This shortfall will reduce the Elko County Fund to $1.224 million by June 30, 1989. The budget amounts for the governmental and expendable trust funds, totaling $15.1 million, are presented in Table 2-23.

2.5.1 City of Elko

The City of Elko revenues for fiscal year 1988-89 is $5.845 million, consisting of governmental fund types and expendable trust funds. These revenues are $48,399 in excess of the projected expenditures and expenses. In addition, the City has proprietary fund revenues of $1.7 million for municipal waterworks and sewer. The 1988-89 budget for the City of Elko, totaling $8.3 million, is provided in Table 2-24.

2.5.2 City of Wells

The audit for the City of Wells on the fiscal year 1987-88 financial statement reported general fund revenues of $587,500, which was $70,900 greater than the expenditures of $516,600. The general fund balance as of June 30, 1988 was $210,600. The balances for the special revenue and capital improvement funds at the same time were $6,500 and $57,600, respectively.

The Wells City Charter establishes a lawful City government general obligation debt limit of 40 percent of the last assessed valuation of taxable property. The debt limit for 1989 was $4.7 million, with a $153,000 obligation debt subject to the limit. An additional $1.13 million of water revenue bond is proposed (George K. Baum & Company 1989).

Table 2-23. BUDGET AMOUNTS FOR GOVERNMENTAL FUNDS AND EXPENDABLE TRUST FUNDS, ELKO COUNTY, FISCAL YEAR 1988-89

Fund Name	Budget
General	$6,700,854
Road	1,900,396
Indigent	457,101
Ag. Extension	68,520
Library	431,877
Revenue Sharing	0
Recreation	73,637
Lib Special Federal	62,000
In Lieu of Taxes	1,322,642
Road Equipment Reserve	166,887
Med Asst. to Indigent	133,424
Reg Street & Hwy	933,759
Jail Special Revenue	250,000
Capital Projects	591,382
Lib Bldg. Improvement	1,921
Elko Airport Cap Proj	625,088
Law Enforce. Cap Const.	27,099
Library Service	49,324
U.I.L.R.	96,110
Fair Board, Fair Improv.	35,000
Fair Board	38,738
Hosp Care/Ind Persons	33,356
So Fork State Bond Red	76,334
Forensic Services	0
Jarbidge Water Feasib.	0
Debt Service	1,067,786
TOTAL	15,143,235

Source: Elko County, Office of the Comptroller

Table 2-24. BUDGET AMOUNTS FOR GOVERNMENTAL FUNDS AND EXPENDITURE TRUST FUNDS, CITY OF ELKO, FISCAL YEAR 1988-89

Fund Name	Budget
General	$4,706,611
Recreation Fund	837,598
Elko Municipal Airport	182,933
Golf Fund	246,100
Capital Preservation	904,227
Railroad Relocation	980,276
Airport Expansion	16,498
Health Ins. Trust Fund	295,409
Unemployment Compensation	37,132
Debt Service	53,708
TOTAL	8,260,492

Source: City of Elko

2.6 SOCIAL CONDITIONS

Data used for the social assessment included baseline information collected for the general socioeconomics impact assessment task, and the socioeconomic impact analyst's projections of project effects in specific areas such as population, jobs, and community services. This was primarily quantitative information. It was supplemented by information about the character of communities: the "quality of life," residents' likes and dislikes about their communities, residents' perceptions of the adequacy or inadequacy of facilities and services in the community, community experience with prior change, individuals' attitudes toward change, residents' ideas about what project-related change or the absence of that change might mean to them as individuals and as community members. These categories of information were identified with reference to a model of social organization presented in the BLM Guide to Social Assessment (the Guide; Branch et al. 1982). The model identifies three components: community resources, community social organization, and indicators of wellbeing. The Guide suggests that each component can be described for a community with information about certain indicator factors. The indicator factors are summarized in the Guide as follows:

- Community Resources
  - Historical Experience with Development
  - Cultural Characteristics (especially as they relate to attitudes toward change)
  - Demographic Characteristics
  - Occupational/Labor Force Characteristics
  - Employment/Income Characteristics
  - Facilities/Services/Fiscal Resources (existing and planned)
  - Organizational and Regulatory Structure
  - Leadership Characteristics
  - Residents' Attitudes toward Development
  - Residents' Perceptions of the Community

- Community Social Organization
  - Diversity/Complexity (of values and interests)
  - Outside Ties (to markets, trends, sources of aid)
  - Distribution of Resources/Power
  - Coordination/Cooperation among People in the Community
  - Patterns of Personal Interaction

- Indicators of Social Wellbeing
  - Rates of Behaviors (e.g., divorce, crime, delinquency)
  - Access to Resources
  - Perceptions of Community and Personal Wellbeing

Information about these indicator factors was obtained from a variety of sources: stories in local newspapers, review of the socioeconomic impact analyst's records of discussions with community and county officials, input from Native Americans at a meeting of the Western Shoshone Elders, review of concerns expressed at the EIS scoping meeting. A major source of information was interviews with residents and officials of the two communities studied. The interviews were conducted as open-ended telephone conversations, with a list of questions used as a guide during interviews. Interviews took place in April and May 1989. Individuals consulted in interviews are listed in the section on consultation.

For comparative purposes, a followup social and economic impact survey of the Valmy power plant construction (WCC 1982) was consulted, as were notes from the socioeconomic analyst's discussions with officials from Carlin and Elko regarding effects of the mining boom in those communities.

The social conditions sections for Elko and Wells below and in Section 4.11.6 of the EIS present baseline information about the indicator factors for each of the three components, although factors are not called out by name.

2.6.1 City of Elko

Elko residents value the combination of urban amenities and small-town setting that the City offers. Their comments include the following: there are a variety of social activities available; residents are on a first-name, friendly basis with a large number of people; one does not need a building permit or license for every little thing you want to do; people feel safe in their homes at night.

Elko is currently responding to very rapid population increase associated with expansion of gold mining activities. Growth over the past 20 years had been under 5 percent annually until the last 2 years, when population increased by more than 30 percent, according to City staff. Because of state law that ties local tax rates to estimates of population made at the state level, neither the City nor the County have an option to make significant staffing increases or changes in governmental structure in response to current increased demands for services. They must wait until state estimates catch up with the actual local population increase. However, they are working within the bounds of the law to increase public services and to encourage increases in private services. Both City staff and private citizens express confidence that new demands will be met within a few years. They appear convinced that the response effort is adequate and appropriate. No one is happy with the shortages and stresses associated with mining-related growth, but they characterize them as inevitable accompaniments of the kind of growth that mining brings: speedy and relatively unplanned.

Elko residents say that prior to the mining boom, employment in Elko was divided between gaming, ranching, and government jobs. Outside of Elko there were ranches in the valley areas, and some small mining operations. Over the last 20 years, private ranches have been bought up by corporations so that family operations are rare. Large-scale mining and associated construction jobs have attracted a more transient labor force, in the eyes of people who arrived before the boom.

Sheer numbers of new residents have changed some of the qualities of daily life. Long time residents say that traffic is worse, that drivers are rude, that "driving under the influence" incidents are frequent. They say that the City used to be a quiet place. Now there are fights, incidents of break-ins and petty theft, trespassing has become an issue because people do not respect property. They note that drugs have come into the schools, and parks are overcrowded. On the positive side, residents do not perceive an unemployment problem in the City, and they see that more specialty services and a greater diversity of supplies and equipment are available locally.

Residents, both old and new, perceive that some long-time families in Elko have been the "doers" in the City for many years. They are uncertain whether that is changing--the population increase is too new to permit such an evaluation. They note that many of the newcomers have little stake in the town because they will move on when the mining-related jobs are gone. More permanent residents guess that these people will have little effect on old patterns of social and political influence.

City staff, old and new residents alike are in favor of continued growth in Elko. They feel that the City can handle it, that the catch-up with the mining boom is almost complete, that the City still offers them what made it attractive all along--a rural feel with many of the services that characterize a more urban community.

Recognized ethnic identities in Elko include American Indian, Hispanic, and Basque. The Elko Indian Colony has grown from about 240 residents in 1980 to about 900 in 1989. As a result, the Elko Band Administrator reports, the Colony is facing the same problems as the City as a whole--problems related to rapid population increase. Growth at the Colony is attributed primarily to programs that supported construction of Indian housing, but it is acknowledged that the mining boom has provided full-time

steady jobs for some individuals on the Colony who never previously had stable employment. Neither Indian nor non-Indian residents feel that Indians are identified as a distinct, separate group, except when their status as members of a separate nation is brought into play by the federal government. The Colony is physically surrounded by the City, and Indian children attend the same schools as non-Indian children do.

The Hispanic population, estimated to be approximately 10 percent of Elko's total, is recognized as the largest minority, but is thought to be relatively assimilated into the general population in attitudes and characteristics. Basques are a very visible minority, although their numerical representation in the population is unknown. Many are construction contractors or owners of other kinds of businesses. They are reported to be a strong collective group, very hard-working, and pro-growth.

2.6.2 City of Wells

Residents of Wells value the small size of the community, the individual privacy, the geographic expanse of the area. They report that former residents who return for school reunions express regret that they cannot live in Wells, because they cannot find local employment.

Local employment is predominantly in the service industry; most people are waitresses, gas station attendants, bartenders, dealers. These people would prefer other jobs if they were available.

Although the population of the City of Wells has grown by 15 percent or more since 1980, residents do not feel as if there has been radical change during that period. They recognize some change, but feel that it has come so slowly that it was not noticed as it happened.

The business community is concerned because the economy of the City is not moving. According to one businessperson, since the interstate highway

bypassed Wells in the early 1980s, it has been necessary for Wells businesses to actively try to bring customers in, and they have not proven effective at that task. Businesspeople report that current prices for food and goods are higher in Wells and Elko than in Twin Falls. It is a seller's market in Elko, where demand is great because of the mining population influx, while it is a buyer's market in Twin Falls, which supports a number of competing large stores and is situated in a state in economic recession.

City administrations past and present have worked to attract new businesses, directly and by providing infrastructure. They say that they cannot support City services without economic growth. There was virtually 100 percent public support in the past successful effort to bring a state honor farm to the Wells vicinity. Wells made a bid for a major snowmobile event, but lost when unseasonal weather destroyed new facilities. Improvements to the airport have been carried out incrementally. An industrial park has been readied, with sewer and water lines in place. A mobile home park is planned to go in next to the industrial park. The water and sewer system has been upgraded, and federal assistance is in place to begin the final phase: installation of water meters. The City expects that metering will cut water use in half and increase available sewer capacity proportionately. They report that they have already identified additional landfill capacity for solid waste.

The social organization and power structure in Wells has already undergone change. Only a few old-time families are left in the community. Newcomers are active in business and politics. Residents do not see a simple split between oldtimers and newcomers as the cause of acknowledged disagreements within the community. There are some disagreements rooted in disputes from years past, and some that simply reflect different ideas about ways to reach similar goals. People are impatient with the divisiveness, but accept it as a given. They can cite multiple examples where people have worked together on a project, despite strong disagreements in other areas.

Local residents recognize that one cost of living in Wells is the need to travel to obtain most of their goods and services. They see public services as generally adequate, but would like to see more diversity available in consumer goods and services.

Residents are in favor of population growth. They see it as the key to economic growth which, in turn, is necessary to support City services and to provide jobs for themselves and their children. They recognize that some problems come with growth; they point to increases in crime and strains on public services. However, they perceive that Elko is responding very successfully to rapid growth, and they believe that Wells could also be successful. This belief seems to come from the fact that Wells' public services and facilities are not yet used to capacity, and are actively being evaluated to assure that they can handle additional growth.

Recognized ethnic identities in Wells include American Indian and Hispanic. The Hispanic population, less than 10 percent, is seen as generally assimilated; they are characterized as indifferent to growth. The American Indian population, also less than 10 percent, is perceived as a more distinct entity. There is a residential colony, and a tribal government. Depending upon who is in power in the tribal government, relationships between the City and the colony vary from cooperation to separation.

2.7 OTHER POTENTIALLY AFFECTED COMMUNITIES

2.7.1 City of Twin Falls

Located approximately 100 miles from the proposed power plant site and 44 miles north of Jackpot, Twin Falls is the county seat for Twin Falls County, Idaho. It is also the largest community within 100 miles of the proposed power plant.

2.7.1.1 Population. The City has an estimated population of 27,750 (1988). From 1960 to 1970, population in Twin Falls grew by 8.88 percent while the next decade saw an increase of 19.60 percent. Between 1980 and 1988, the estimated percent increase in population was 5.88 percent. Currently, approximately 50 percent of the total population of Twin Falls County lives in the City of Twin Falls. While no projections of the City's population are available, the County population is expected to grow at an annual rate of 1.14 percent between 1987 and 1993. Applying the same growth rate to the City's population, it is estimated that the City's population will be 29,331 by 1993 and 31,546 by 2000. Table 2-25 provides details of population growth for the City and the County.

The 1980 census gives the ethnic composition of the community. Ninety-four percent of the population is white, 4 percent is Hispanic, and the remaining 2 percent is accounted for by other racial groups. American Indians make up about 0.5 percent of the total City population. The average household size for the County in 1987 was estimated to be 2.7 and is projected to be 2.6 in 1992.

2.7.1.2 Employment and Income. City-specific data on employment is not available (McDonald 1989). Twin Falls County as a whole has a civilian labor force of 23,743 (1989) with an unemployment rate of 5.2 percent. This has declined from 5.6 percent in 1978 and 5.8 percent in 1988. From 1978 to 1988, the civilian labor force has grown by 11.4 percent, and the number of persons employed has increased from 22,053 to 24,511. Currently, there are 1313 unemployed persons in the County (June 1989). Agriculture is the Number 1 industry (McDonald 1989) with a fast-growing dairy sector. Among the nonagricultural activities, wholesale and retail trade, services including mining, government, and manufacturing are important. The food processing industry is a major employer in the County. Per capita income in the County has increased by 23 percent between 1982 and 1987. In 1987, the per capita income for the County stood at $11,703. The latest figure available for the City of Twin Falls is a per capita income level of

Table 2-25. HISTORIC AND PROJECTED POPULATION GROWTH, TWIN FALLS

	1960	1970	1980	1988	1993	2000
Twin Falls (City)	20,126	21,914	26,209	27,750	29,331	31,546
Twin Falls (County)	41,842	41,807	52,927	57,092[a]	61,648	65,553

[a] This population is for 1987.

$9600 in 1985. About 39 percent of the population of Twin Falls is categorized as persons of low and moderate income.

2.7.1.3 Housing. There are approximately 10,000 housing units in the City of Twin Falls, based on electric hook-up data (Region IV Development Association 1988). Not much has been added to the housing stock over the last 3 to 4 years. Inquiries indicate that though property for sale is plentiful, the rental housing market is relatively tight (Zuck 1989; McAlindin 1989). In 1990, construction on housing is anticipated to start in two subdivisions that have been approved. Six more subdivisions have been plotted though not yet filed for approval. There are over 1000 hotel and motel rooms and occupancy levels run around 80 percent in summers and 65 percent for the rest of the year.

2.7.1.4 Schools. Twin Falls School District currently consists of six elementary, two junior high, and one senior high schools. The total enrollment for the 1988-89 school year is 6857, having grown by 87 students over the previous year. There are 321 teachers, 12 teacher aides, and 13 principals and assistant principals. The student-teacher ratio is 21:1. The schools are presently near capacity and the school board is now doing preliminary work on estimating the future needs of the school district. Primary school funding sources are the State Board of Education and property tax revenues. In addition to the public schools, there are six private and parochial schools, and nine kindergartens and pre-schools. Twin Falls has higher education facilities in the form of one community college and an Idaho State University regional center.

2.7.1.5 Law Enforcement. Twin Falls (City) Police Department has 49 officers which yields a service ratio of 1.76 officers per 1000 residents. There are no plans for adding personnel at this time, and the service ratio would stand at 1.65 per 1000 residents by 1993 and 1.55 by 2000, if no additional officers are hired to accommodate projected population growth. Police response time is between 8 and 10 minutes within the City (McAlindin 1989).

2.7.1.6 Fire Protection. Fire protection is provided out of three stations in the City. There are 28 paid firefighters in the district and the response time is 3 minutes. The service ratio works out to be 2.72 firefighters for every 1000 households (based on the population and estimated household size), and will stand at 2.67 by 1992 and 2.48 by 2000, if no additional personnel are hired to accommodate the additional population growth. No expansion of facilities or personnel is planned at this point in time (McAlindin 1989).

2.7.1.7 Medical Care. Twin Falls contains two hospitals, two hospice facilities, and four nursing homes with a total of 139 physicians and 30 dentists. Magic Valley Regional Medical Center is the largest facility with 165 beds, intensive care units, and a proposed cancer unit to be added in 1989. While there are no plans to add staff at this time, personnel will be hired by the medical center as required. Twin Falls clinic and hospital, the second important facility, has a total of 44 beds (McAlindin 1989). The 139 physicians serve the entire county population, and the service ratio works out to be 2.43 per 1000 residents and will be at 2.26 by 1993, if more physicians are not hired to accommodate the additional growth.

2.7.1.8 Libraries. There are two libraries in the county with a total of 181,212 volumes.

2.7.1.9 Utilities. Idaho Power Company supplies electricity. As of February 1989, it had 11,217 customers in Twin Falls of which 85 percent were residential. Natural gas is supplied by Intermountain Gas Company, which as of March 1989 had 6305 customers of which 83 percent were residential. Currently, no constraints are foreseen with respect to power and gas supply (McAlindin 1989).

Water is provided by the City and comes from three reservoirs, three well sources, and a major groundwater source. The existing system capacity is 39 mgpd which exceeds the current consumption level of 12 mgpd. The system was upgraded in 1987. The sewage system capacity increase is being carried out at the moment. The existing system handles 7.6 mgpd. Solid waste disposal involves about 150 tons per day on a 6-day basis. The landfill site has a life expectancy up to 2000 (McAlindin 1989).

2.7.1.10 Public Finance. The State of Idaho has a basic sales tax rate of 5 percent and a corporate income tax rate of 8 percent. Property tax is collected at the rate of $2.0354 per $100 of assessed value. Property tax revenues are distributed among five jurisdictions in the following manner: County 18 percent, City 39.6 percent, school district 28 percent, College of Southern Idaho 8 percent, and Twin Falls highways 6 percent. Idaho has a state personal income tax.

2.7.2 Jackpot

Jackpot is a community of approximately 1546, located on Interstate 93 at the Nevada-Idaho border (Boucher 1989). It is approximately 55 miles from the proposed power plant site via the proposed access road and about 97 miles via the Moor Summit Alternative access road.

The town has recorded a growth of population of almost 95 percent since 1980 and is projected to grow at the same rate. Applying an annual growth rate of 10 percent, almost 1700 persons will be added to the community by 2000. Using the average household size for the county (2.67 persons per household), it is estimated that there are about 579 households in the community at present. The economy is based on tourism and gaming (Boucher 1989).

Housing stock in the town consists of 27 single-family homes, 97 multi-family units, 180 mobile homes, and 12 apartment complexes with a total of 275 apartments. There are no homes available to rent, and the vacancy

rates for apartments are reported to be low. There are about 93 RV spaces and 671 motel/hotel rooms. Motel/hotel vacancy rates tend to be low over weekends. Average vacancy rate is around 45 percent. Two hundred thirty-five motel rooms are planned, though no building permits have been applied for yet (Boucher 1989).

There is one combined school at Jackpot which is under the jurisdiction of Elko County School District. The enrollment for the school is now 262, having grown by 20 over the previous year. The school has a total capacity of 341 (Billings 1989).

Utilities are provided by the town. The water supply system has been updated and plans exist to add one more well. The sewage system can handle some population growth and may also be expanded in the future (Boucher 1989). The landfill for solid waste disposal has excess capacity. The town is unincorporated; therefore, law enforcement services are provided by the Elko County Sheriff's office. There are four officers and three vehicles in Jackpot. The fire department consists of one fire chief, two pumper trucks, and one emergency truck. Firefighters are volunteer workers (Boucher 1989).

There is no permanent medical facility in the town. A nurse from the public health department of the county visits the community twice a month. For medical emergencies, there are two county-operated ambulance units stationed in Jackpot. For all other medical help, the residents travel to Twin Falls (Boucher 1989).

There are two small community convenience stores; the residents travel 48 miles to Twin Falls for most purchases (Boucher 1989).

2.7.3 Wendover

Wendover consists of the twin communities of West Wendover on the Nevada side and Wendover on the Utah side of the state border. It is

located approximately 71 miles southeast of the proposed power plant site on Interstate 80.

West Wendover is an unincorporated community of Elko County with an estimated population of 2424 in 1989. Over the period 1980-1989, the community grew by over 500 percent from a population of only 395 in 1980. Much of this growth took place in the years 1983-1986, and since then the growth rate has leveled off (Boucher 1989). Based on an average household size of 2.67, there are an estimated 908 households in the community. West Wendover is currently facing an election which would allow incorporation by July 1990 (Boucher 1989).

Wendover (Utah) has an estimated population of 1500, which has grown from 1099 in 1980 at an average annual growth rate of 4.05 percent. Since the economic growth of Wendover is tied to the developments in West Wendover, it is assumed that population growth in Wendover has also leveled off now (Wendover City Offices 1989).

The economy of both communities is based on tourism and gaming. West Wendover developed as truck-stop casinos were established at this location in the mid-1980s. Wendover is mainly a bedroom community with most of its population working in West Wendover, and some people working locally in the service industry, mainly in motels, restaurants, stores, and a chemical factory (Wheeler 1989).

Housing stock in West Wendover consists of 68 single-family homes, 364 mobile homes, 449 multi-family units, and 21 apartments. Additional housing is available in Wendover, Utah (Boucher 1989). There is a total of 444 apartment units available in both communities, of which approximately 16 to 18 percent are currently vacant (Crick 1989). Currently there are no plans for construction of more housing. Transient housing consists of five hotels and one motel in West Wendover and six motels in Wendover with a total of 1064 rooms. West Wendover also has 139 RV spaces. Hotel rooms

are almost entirely filled throughout the year but rooms are available in motels. Tourist volume increases on weekends and holidays (Boucher 1989).

There is one combined school in West Wendover which has an enrollment of 544. This enrollment has grown by 91 students over the last year and the school is currently functioning at capacity (Billings 1989). Wendover has a high school with a current enrollment of 280, 45 students more than the previous year's enrollment (Wendover High School 1989).

For medical care, the communities depend on Salt Lake City or Elko. The clinic at West Wendover is not open on a regular basis due to the lack of a practitioner. For emergencies, a private ambulance company provides service with four ambulance units. There are four dentists in the communities (Boucher 1989).

Other community services consist of a volunteer fire department equipped with one engine that is shared by both communities; the Elko County Sheriff's which office provides law enforcement services through five personnel and four vehicles; and a City police department consisting of one chief, three officers, and two part-time personnel (Boucher 1989).

With respect to utilities, insufficient water supply is seen as a possible constraint on further growth in the two communities. For the past 3 years, Wendover has been taking water from the Nevada side when its own supply has been insufficient (Wheeler 1989). It is also reported that the West Wendover water supply system needs to be upgraded (Boucher 1989). While there is enough water at the source, the delivery system is proving to be insufficient. The sewage system in West Wendover is also reported to be approaching capacity and will be expanded. The addition of two evaporation ponds is planned (Boucher 1989). On the Utah side, the sewage system currently has sufficient capacity, and expansion is planned in 2 to 3 years.

The communities are served by a mini mall and two shopping plazas. Residents travel to Salt Lake City for most purchases (Boucher 1989).

3.0
SOCIOECONOMICS - ENVIRONMENTAL CONSEQUENCES

This section describes potential impacts to population; employment and income; housing; community services and facilities; public finance; and social conditions in the study area that would result from implementation of the proposed action or alternatives. The proposed action consists of the proposed access at Wilkins and the use of a construction-worker camp. Alternatives analyzed here include proposed access road, no construction-worker camp; Moor Summit access road (with and without a camp); and no action. The impacts associated with the Brush Creek alternative would be essentially the same as those with the proposed access. The land exchange component of the proposed action would have no effect, positive or negative, on the socioeconomic issues itemized above. Therefore the land exchange is not discussed further.

The description of the potential consequences of the construction and operation components of the proposed action is combined because of the overlapping construction and operation schedules of the power plant. The analysis describes project impacts at three points: when the construction workforce would peak (1993), when the total workforce (construction plus operation) would peak (2000), and when the operation workforce would peak at full buildout (2010).

A series of threshold indicators are used in this analysis to identify potentially significant socioeconomic impacts. Adverse socioeconomic impacts are indicated if the capacity of existing and planned housing and community services and facilities is insufficient to meet the anticipated demand associated with projected project-related population increase. The

issue of capacity is particularly critical in a rural area that is already experiencing increased demand on its services for reasons other than a proposed future project. This study area is currently experiencing service demand associated with increased gold production in the area. Adequate housing supply, particularly of temporary housing units, is necessary to support inmigrating workers and their families. A potential constraint to an increase in housing supply can occur if adequate sewer and water capacity do not exist. For any one of these interdependent issues, including housing and community services and facilities (schools, law enforcement, fire protection, medical care, wastewater treatment, water supply, and solid waste disposal) the threshold indicator of a significant impact is an anticipated demand greater than projected supply.

Estimates of the increase in direct and indirect employment and population are based on information provided by the project proponent on anticipated workforce and construction schedule, as well as assumptions concerning worker marital status and family size. Population increases in the study area would occur during both the construction and operation phases of the project. A more detailed discussion of the methods and assumptions used to develop the population and employment projections, including settlement patterns, is provided in Appendix A. Results of the analysis conclude that the majority of impacts would occur to Elko and Wells so those communities are discussed in detail. The communities of Twin Falls, Jackpot, and Wendover are discussed in less detail in Section 3.7.

The anticipated construction schedule for the proposed power plant assumes the completion of a new unit every two years. Once the project were underway, a workforce could consist of workers finishing construction of a unit, additional workers beginning construction of another unit, and workers operating the completed units. The construction workforce would consist of tradespeople who might have assignments of limited duration. In addition, the construction workforce would peak during approximately one to three months during the summer. The peak construction workforce of 805 is

anticipated in 1993. The peak total workforce of 805 construction workers and 300 operation workers would occur around the year 2000. Buildout of all eight units would require approximately 564 operation workers in approximately 20 years in the future.

These direct jobs and the additional income in the area associated with the jobs would generate the demand for service or support jobs in the communities. These support jobs could be as few as 120 or as many as 375 during construction and as few as 225 or as many as 420 during operation. The jobs would consist of a few community service jobs, as described later in this analysis; and a variety of generally unskilled, low-paying jobs.

Accompanying the workers would be spouses and dependents, resulting in an additional local population increase. Assumptions regarding the number of spouses and dependents differ for the construction-worker camp and no construction-worker camp alternatives. Due to the restrictions of a construction-worker camp, children could not be permitted to accompany workers to the camp, and would likely remain at the workers' current residence. Population increases in the communities under the construction-worker camp alternative would be approximately half the average increases under the no construction-worker camp alternative. For instance, during the peak construction year, population in the communities would increase by approximately 448 if a construction-worker camp were provided and by an average of 1068 and a peak of 1716 if one were not provided. The difference in population increases associated with each alternative would gradually reduce as the operation workforce increases with completion of power plant units. The anticipated population increase in the study area in the year 2000 would be 1170 if a construction-worker camp were available and an average of 1790 and a peak of 2881 if one were not provided. Population increases associated with the operation workforce at buildout of the power plant would be 1362.

3.1 EMPLOYMENT AND INCOME

The proposed project would result in an increase in the number of jobs in the area. These jobs would include direct employment in power plant construction and operation and indirect or support jobs. The size of the workforce would fluctuate with the planned construction schedule, which assumes construction of a power plant unit every 2 years. With this schedule, the peak construction workforce would consist of a combination of some workers finishing one unit as others begin another unit. The peak construction workforce, consisting of 805 workers, would occur 2 years after the project began. The average workforce during that same year is expected to be approximately 500. The construction workforce would include:

- Pipefitters
- Electricians
- Laborers
- Carpenters
- Ironworkers
- Operating engineers
- Sheet metal workers
- Millwrights
- Painters
- Teamsters
- Cement masons
- Boiler makers
- Insulators
- Bricklayers
- Managers

Some of these trades would be utilized for only a short time during the construction of each unit, while others could be required throughout most of the project.

Upon completion of the first unit, operating workers would be needed. It is anticipated that 115 workers would be needed to operate the first unit and that approximately 140 workers would be required to operate each pair of units (see Appendix A for a more detailed discussion of workforce requirements). The operating workforce would steadily increase as units were completed, reaching a workforce of 564 upon completion of eight units.

It is assumed that approximately 10 percent of the power plant construction jobs would be filled by local hires, based on experience at a similar power plant in Nevada. A contract would be negotiated between the proponent and the local labor union (Building and Construction Trades Council of Northern Nevada). Information from the Trades Council indicates that there are currently sufficient tradespeople available in Elko County to substantiate the assumption of a minimum of 10 percent local hires. In addition, the Trades Council anticipates greater availability in the future, once the gold mill construction is completed (Rusnak 1989).

The indirect or support jobs associated with this project include the additional jobs that support the construction and operation of the power plant and the jobs that are generated to serve the needs of the inmigrating workers and their families. It is estimated that these support jobs could total as few as 120 or as many as 375 additional jobs during the peak construction period, and as few as 225 or as many as 420 additional jobs associated with the operation workforce at full buildout of the power plant. These support jobs would be filled by currently unemployed residents, dependents (spouses and high school-aged children) that accompany construction and operation workers, and people who inmigrate to fill the new positions. In addition, these jobs could be filled by high school graduates from Wells that have previously left Wells to seek employment.

Elko County had 800 unemployed persons in July 1989 and the City of Wells had approximately 50 people unemployed in 1988. The support jobs would primarily employ unskilled labor at relatively low rates, and it is

unlikely that many people would relocate to fill these jobs. Depending on the number of people who inmigrate for the support jobs, the populations in the local communities could increase slightly.

The average hourly wage for construction workers associated with the power plant is estimated to be $17.83 in wages or $32.11 in wages, subsistence, and fringes in 1988 dollars. This is substantially higher than pay for other jobs in Elko County. The average hourly rates for mining, construction, and trade are $15.37, $11.79, and $7.20, respectively. The equivalent bare labor annual wage for construction workers would be $35,700, which is approximately double the average annual wage in Elko County, which was $17,441 in 1987 (NENDA 1989). Estimated annual payroll for the average workforce would be $17.8 million (in 1988 $). The total anticipated payroll (bare labor) associated with construction of the first power plant unit is over $48 million (in 1988 $).

The higher wages would provide an economic boost to the local communities and would stimulate secondary employment or the creation of service jobs. If the workers spent up to an average of 37 percent of their annual gross pay in the local communities (US Department of Commerce 1975), the amount of worker expenditures generated in the communities would be approximately $6.5 million annually. Sales tax associated with these expenditures would also be generated from the sale of taxable items.

3.1.1 Proposed Action

Workers employed in the direct jobs under this action would be located at the power plant site. Workers employed in the indirect jobs under this alternative would be located in Twin Falls, Elko, Wells, Jackpot, and the construction-worker camp. As new residents moved into the local communities, additional jobs would be created to meet their needs. The workers residing at the construction-worker camp would buy limited personal items such as beverages and gasoline in the nearby towns of Wells and Jackpot after work and on weekends. It has been found that most workers who

utilize a construction-worker camp have primary residences in cities such as Reno, Salt Lake City, Twin Falls, etc. These workers tend to commute home to their families on the weekends. However, a small number of construction-worker camp residents would utilize local services on the weekends. The construction-worker camp would generate support jobs for cooking and cleaning, and these workers could also reside at the work camp. The operation of the construction-worker camp itself would require goods and services, the majority of which would be purchased from the local communities.

3.1.2 Proposed Access Road, No Construction-Worker Camp Alternative

Under the proposed access road, no construction-worker camp alternative, a similar number of service jobs would be associated with the construction and operation of the power plant, and with support of the inmigrating workers. These jobs would be located in the local communities. The workers that would have resided in the construction-worker camp would purchase in the communities in which they reside, decreasing the amount of purchases somewhat in Wells and Jackpot.

3.1.3 Moor Summit Access Road, Construction-Worker Camp Alternative

With the Moor Summit access road, identical direct and indirect jobs would occur as generated with the proposed action. However, the distribution of the indirect jobs would be in Elko, Wells, and Wendover to support the new construction and operation workers that would reside in those communities.

3.1.4 Moor Summit Access Road, No Construction-Worker Camp Alternative

Under this alternative, effects would be similar to those under the proposed access road, no construction-worker camp alternative, with indirect jobs located in Elko, Wells, and Wendover.

3.1.5 No Action Alternative

Under the no action alternative, there would be no direct or indirect employment effects.

3.2 POPULATION

The population estimates presented in this section are based on population models described in Appendix A. These estimates are "best guesses" based on numerous assumptions and should not be used for planning purposes. It should be noted that future changes in local conditions, such as construction of new, reasonably priced housing in Wells or Jackpot, could result in attracting more workers to these communities than the models predict.

3.2.1 Proposed Action

Construction of the power plant utilizing a construction-worker camp on site is the preferred alternative. Use of the camp, containing 220 dormitory-style rooms and 300 recreational vehicle spaces, would meet the fluctuating housing needs of a construction workforce. The increase in population in the local communities throughout the construction phase is anticipated to remain somewhat constant. Workers who prefer to live in town or workers with families accompanying them would use lodging in the local communities. As the total number of workers changed from below average to average to the peak number of construction workers, the construction-worker camp could house the additional workers. In the peak construction year of 1993, a peak workforce of 805 and an average workforce of approximately 500 is anticipated (see Appendix A for technical discussion of population and employment estimates). The increase in population in the communities is expected to be slight during construction. The peak total workforce, a combination of construction and operation workforce, is anticipated to occur around the year 2000 and consist of 800 construction workers and 300 operating workers. Estimation of the operating workforce assumes that all eight power plant units are

built. Completion of all eight units is anticipated in the year 2007, and the final operating workforce is estimated at 564 in 2010.

Table 3-1 presents the expected increase in population in Elko and Wells with the proposed action. The percentage of increase to projected population in Elko would range from 1 to 3 percent during the years analyzed, while in Wells it would range from 2 to 11 percent. Percentage increase of population associated with the project would decrease in the future years as normal growth in the communities occurs. The City of Elko experienced an increase of 1300 residents between 1987 and 1988. An increase of the small magnitude expected for the power plant would occur so far in the future and over so many years that it is not anticipated to be a significant impact by local administrators (Boucher, Lipparelli 1989). The increase in Wells is expected to occur primarily with the settling of the operation workforce in a community located closer to the plant site. The population increase of 6 percent by the year 2000 and the permanent increase in population of 8 percent over projected population in the City of Wells by the year 2010 would not be significant.

3.2.2 Proposed Access Road, No Construction-Worker Camp Alternative

In the proposed access road, no construction-worker camp alternative, the population increases in the communities would be larger and of a greater range. The range of population increases presented in Table 3-2 is for an average construction workforce of 500 and a peak construction workforce of 805. In years other than the peak year, the average workforce would be less than 500. The percentage of population increase in Elko in 1993 is expected to be 2 percent of the current population, with a 3 percent increase during the peak months. Wells would experience an average increase of 4 percent above the projected level during the same peak construction year, with a peak of 6 percent increase in the summer. The percentage of increase associated with peak total workforce in Elko and Wells is expected to be an average of 3 percent and 9 percent, respectively. Response to the population increase in Elko could be easier

Table 3-1. INCREASE IN POPULATION, PROPOSED ACTION

	Current Elko Population	Projected Elko Population	Population Increase Elko			Current Wells Population	Projected Wells Population	Population Increase Wells		
			Number	Curr. (%)	Pro. (%)			Number	Curr. (%)	Pro. (%)
Peak Construction (Year 1993)	16,000	19,300	139	1	1	1400	1490	22	2	1
Peak Workforce (Year 2000)	16,000	25,000	356	2	1	1400	1630	101	7	6
Operation Workforce (Year 2010)	16,000	36,300	408	3	1	1400	1860	150	11	8

Note: Assumes peak workforce of 805. These estimates for communities would decrease slightly for an average workforce as workers on the waiting list for the construction-worker camp move into the camp.

Table 3-2. INCREASE IN POPULATION,[a] PROPOSED ACCESS ROAD, NO CONSTRUCTION-WORKER CAMP ALTERNATIVE

	Current Elko Population	Projected Elko Population	Population Increase Elko			Current Wells Population	Projected Wells Population	Population Increase Wells		
			Number	Curr. (%)	Proj. (%)			Number	Curr. (%)	Proj. (%)
Peak Construction (Year 1993)	16,000	19,300	331-532	2-3	2-3	1400	1490	53-86	4-6	4-6
Peak Workforce (Year 2000)	16,000	25,000	548-749	3-5	2-3	1400	1630	132-165	9-12	8-10
Operation Workforce (Year 2010)	16,000	36,300	408	3	1	1400	1860	150	11	8

[a] Range of increase is from average construction workforce of 500 to peak construction workforce of 805.

due to the size of the City; however, Elko's ability to supply the needs of the increased population would be dependent upon the level of gold mining activity at the time of peak workforce demand. It is planned that mill construction by both Newmont and Barrick gold companies will be completed by 1991 (the first year of power plant construction), reducing the number of construction jobs in the area. However, new mining construction could begin, resulting in an increasing population associated with the mines, or gold prices could fall resulting in decreased gold production and therefore a decrease in jobs and population in the communities. Due to the extremely uncertain future in Elko, the significance of a 3 percent increase is unclear.

A 4 to 6 percent population increase in the City of Wells over current population could be significant because of the need for increased services, due to the cyclical nature of the increase. Although the percentage of the population increase near the end of the proposed project would be larger, the fact that the workforce would be stable and that there would be a long planning time for the community combine to make the impact less significant in terms of provision of services.

3.2.3 Moor Summit Access Road, Construction-Worker Camp Alternative

The anticipated population increases in Elko and Wells with this alternative are greater than with the proposed action (Table 3-3). Population increases range from 2 to 5 percent of current population in Elko and 5 to 28 percent of current population in Wells. The increase of 21 percent of projected Wells population would be significant.

3.2.4 Moor Summit Access Road, No Construction-Worker Camp Alternative

The largest potential population increases in Elko and Wells are associated with this alternative (Table 3-4). The increase associated with peak total workforce in Elko would be 7 to 10 percent. Due to the uncertain future in Elko, the significance of this increase is unclear. However, a potential significant impact to the City of Elko could occur

Table 3-3. INCREASE IN POPULATION, MOOR SUMMIT, CONSTRUCTION-WORKER CAMP ALTERNATIVE

	Current Elko Population	Projected Elko Population	Population Increase Elko			Current Wells Population	Projected Wells Population	Population Increase Wells		
			Number	Curr. (%)	Pro. (%)			Number	Curr. (%)	Pro. (%)
Peak Construction (Year 1993)	16,000	19,300	309	2	2	1400	1490	63	5	4
Peak Workforce (Year 2000)	16,000	25,000	713	4	3	1400	1630	272	19	17
Operation Workforce (Year 2010)	16,000	36,300	763	5	2	1400	1860	395	28	21

Note: Assumes peak workforce of 805. These estimates for communities would decrease slightly for an average workforce as workers on the waiting list for the construction-worker camp move into the camp.

Table 3-4. INCREASE IN POPULATION,[a] MOOR SUMMIT ACCESS ROAD, NO CONSTRUCTION-WORKER CAMP ALTERNATIVE

	Current Elko Population	Projected Elko Population	Population Increase Elko			Current Wells Population	Projected Wells Population	Population Increase Wells		
			Number	Curr. (%)	Proj. (%)			Number	Curr. (%)	Proj. (%)
Peak Construction (Year 1993)	16,000	19,300	737-1184	5-7	4-6	1400	1490	149-240	11-17	10-16
Peak Workforce (Year 2000)	16,000	25,000	1142-1589	7-10	5-6	1400	1630	358-449	26-32	22-28
Operation Workforce (Year 2010)	16,000	36,300	763	5	2	1400	1860	395	28	21

[a] Range of increase is from average construction workforce of 500 to peak construction workforce of 805.

because of the anticipated project-related increase of 1142 to 1589 in 2000, which is then expected to decrease to 763 in 2010. The reduction of the workforce after the turn of the century could leave Elko with under-utilized infrastructure.

Impacts to the City of Wells would be caused by the influx of construction workers in the first few years of the project and the difficulty associated with planning for a temporary, cyclical construction workforce. A 26 to 32 percent population increase over current population in 2000 would be significant because of the need for increased services, especially due to the cyclical nature of the increase.

3.2.5 No Action Alternative

Under the no action alternative, the power plant would not be built. The population in Elko would continue to be affected by the gold mining in the Carlin Trend and the population in Wells would probably continue to grow at a relatively slow rate.

3.3 HOUSING

Due to the boom of gold mining in the Carlin Trend district, the City of Elko is currently experiencing a housing shortage. This shortage has resulted in people with jobs living in cars parked on private property, federal land, or in parking lots; in motels; in tents; or in overcrowded conditions. The number of both permanent and temporary housing units in Elko is 5200, including those recently constructed or permitted and planned for construction. Demand for this housing is presently high and availability of this housing at the time of power plant construction is difficult to predict. Gold production is extremely sensitive to market conditions. Whether gold production (and associated demand for miner housing) will increase or decrease in the future is uncertain.

Housing in the City of Wells is currently tight during the summer months, which would coincide with the anticipated peak construction time. The occupancy rate for rental units during the summer months is approximately 95 percent, and hotels and motels are almost fully occupied. Plans are being made for new housing production in the City of Wells, but many plans are contingent on sewer and water system improvements.

3.3.1 Proposed Action

The proposed action would result in the construction of 220 dormitory units and 300 RV spaces (each of which could house more than one person) at the project site. In addition, an estimated 205 workers would require housing in the local communities during the peak construction period. This number would decrease slightly during average construction periods. The projected distribution of workforce housing demand between Elko and Wells is presented in Table 3-5. At peak construction (1993), 62 housing units would be required in Elko and 10 would be required in Wells based on the percentage of workers living in each community (Table 3-6). Demand for housing in Elko associated with the TSPP project would be 3 percent of the current housing stock and 8 to 11 percent of the existing housing stock in Wells over the life of the project. Elko should be able to accommodate the increased demand for project-related housing unless the mining activity continues to grow or if a significant number of housing units are not built to accommodate non-project-related growth. The power plant housing demand by 2010 in Elko would be approximately 15 percent of the 1000 new housing units constructed in 1988. Although these units would not remain empty until the operation workers arrived, it is a measure of the amount of construction that is currently occurring versus the project-related demand that would occur many years in the future. The demand for housing units in Wells would be significant for the peak construction workforce, due to the small number of existing housing units, the lack of vacancies, and the demand for housing that will be associated with non-project-related growth.

Table 3-5. HOUSING NEEDS IN ELKO AND WELLS, PROPOSED ACTION[a]

	Elko Current Housing Stock	Housing Needs Elko		Wells Current Housing Stock	Housing Needs Wells	
		Number	% of Current		Number	% of Current
Peak Construction (Year 1993)	5200	62	1	500	10	2
Peak Workforce (Year 2000)	5200	143	3	500	40	8
Operation Workforce (Year 2010)	5200	152	3	500	56	11

[a] Range is for average construction workforce of 500 and peak construction workforce of 805.

Table 3-6. SERVICE DEMANDS ASSOCIATED WITH NON-PROJECT-RELATED AND PROJECT-RELATED GROWTH, PROPOSED ACTION

	Elko				Wells			
	Exist	1993	2000	2010	Exist	1993	2000	2010
Housing	5200				500			
Demand of growth		1000	2700	6150		30	80	160
Project-related demand		62	143	152		2	8	11
School Enrollment	4995				432			
Additional enrollment		956	2341	5278		26	67	133
Demand for classrooms		38	93	212		3	7	14
Project-related enrollment		35	88	99		6	25	36
Project-related classrooms		2	4	4		1	3	4
Law Enforcement Officers	31				5			
Demand of growth		6	17	41		0	0	0
Project-related officers		0.3	0.7	0.8		0	0	0
Fire Protection (workers)	21				15			
Demand of growth		2.0	5.4	12.3		0.4	1.0	1.9
Project-related demand		0.1	0.3	0.3		0.1	0.5	0.7
Medical Care (doctors)	16				1			
Demand of growth		3.3	9.0	20.3		0.1	0.2	0.5
Project-related demand		0.1	0.4	0.4		0.0	0.1	0.2

3.3.2 Proposed Access Road, No Construction-Worker Camp Alternative

Under the proposed access road, no construction-worker camp alternative, all construction workers and their families would require housing in the local communities, creating a much larger demand for housing during the construction phase than under the proposed action. It is estimated that approximately 140 housing units would be required in Elko and approximately 23 units in Wells for the average workforce in 1993 (Tables 3-7 and 3-8). With the peak workforce during that year, a total of 223 workers in Elko and 36 workers in Wells would require housing. Due to the short duration of the peak during the summer months, it is likely that housing needs would be met in a variety of ways such as doubling or tripling up in available housing units. It is unlikely that the community would respond with new housing construction to meet the peak demand for housing, because this demand would be for a relatively short time only. In addition, more housing units would be required for the construction workforce in Elko than would eventually be required for the operation workers. In Elko, this would amount to an excess of approximately 70 housing units if housing were constructed for the average total workforce. Resources and funds could have been used unnecessarily if other growth could not fill the vacant units.

3.3.3 Moor Summit Access Road, Construction-Worker Camp Alternative

Anticipated housing needs associated with this alternative of the proposed project are presented in Tables 3-9 and 3-10. The number of houses required in Elko and Wells would be greater with the Moor Summit alternatives. Housing needs range from 138 housing units for peak construction workforce to 289 housing units for peak total workforce in Elko. The need for housing units in Wells would gradually grow to 147 units for the operation workforce.

3.3.4 Moor Summit Access Road, No Construction-Worker Camp Alternative

This alternative would result in significant housing needs in both Elko and Wells (Tables 3-11 and 3-12). Elko has the highest demand associated

Table 3-7. HOUSING NEEDS IN ELKO AND WELLS, PROPOSED ACCESS ROAD, NO CONSTRUCTION-WORKER CAMP ALTERNATIVE[a]

	Elko Current Housing Stock	Housing Needs Elko		Wells Current Housing Stock	Housing Needs Wells	
		Number	% of Current		Number	% of Current
Peak Construction (Year 1993)	5200	140-223	3-4	500	23-36	5-7
Peak Workforce (Year 2000)	5200	221-304	4-6	500	53-66	11-13
Operation Workforce (Year 2010)	5200	152	3	500	56	11

[a] Range is for average construction workforce of 500 and peak construction workforce of 805.

Table 3-8. SERVICE DEMANDS ASSOCIATED WITH NON-PROJECT-RELATED AND PROJECT-RELATED GROWTH, PROPOSED ACCESS ROAD, NO CONSTRUCTION-WORKER CAMP ALTERNATIVE

	Elko				Wells			
	Exist	1993	2000	2010	Exist	1993	2000	2010
Housing	5200				500			
Demand of growth		1000	2700	6150		30	80	160
Project-related demand (average construction workforce)		140	221	152		23	53	56
School Enrollment	4995				432			
Additional enrollment		956	2341	5278		26	67	133
Demand for classrooms		38	93	212		3	7	14
Project-related enrollment (avg)		61	113	99		10	29	36
Project-related classrooms (avg)		3	5	4		1	3	4
Law Enforcement Officers	31				5			
Demand of growth		6	17	41		0	0	0
Project-related officers		0.7	1.1	0.8		0	0	0
Fire Protection (workers)	21				15			
Demand of growth		2.0	5.4	12.3		0.4	1.0	1.9
Project-related demand		0.3	0.4	0.3		0.3	0.6	0.6
Medical Care (doctors)	16				1			
Demand of growth		3.3	9	20.3		0.1	0.2	0.5
Project-related demand		0.3	0.5	0.4		0.0	0.1	0.2

Table 3-9. HOUSING NEEDS IN ELKO AND WELLS, MOOR SUMMIT ACCESS ROAD, CONSTRUCTION-WORKER CAMP ALTERNATIVE[a]

	Elko Current Housing Stock	Housing Needs Elko		Wells Current Housing Stock	Housing Needs Wells	
		Number	% of Current		Number	% of Current
Peak Construction (Year 1993)	5200	138	3	500	28	6
Peak Workforce (Year 2000)	5200	289	3	500	106	21
Operation Workforce (Year 2010)	5200	284	3	500	147	29

[a] Range is for average construction workforce of 500 and peak construction workforce of 805.

Table 3-10. SERVICE DEMANDS ASSOCIATED WITH NON-PROJECT-RELATED AND PROJECT-RELATED GROWTH, MOOR SUMMIT ACCESS ROAD, CONSTRUCTION-WORKER CAMP ALTERNATIVE

	Elko				Wells			
	Exist	1993	2000	2010	Exist	1993	2000	2010
Housing	5200				500			
Demand of growth		1000	2700	6150		30	80	160
Project-related demand		138	289	284		28	106	147
School Enrollment	4995				432			
Additional enrollment		956	2341	5278		26	67	133
Demand for classrooms		38	93	212		3	7	14
Project-related enrollment		78	175	185		16	66	96
Project-related classrooms		3	7	8		2	7	10
Law Enforcement Officers	31				5			
Demand of growth		6	17	41		0	0	0
Project-related officers		0.6	1.4	1.5		0	0	0
Fire Protection (workers)	21				15			
Demand of growth		2.0	5.4	12.3		0.4	1.0	1.9
Project-related demand		0.3	0.6	0.6		0.3	1.3	1.8
Medical Care (doctors)	16				1			
Demand of growth		3.3	9.0	20.3		0.1	0.2	0.5
Project-related demand		0.1	0.4	0.4		0.0	0.3	0.4

Table 3-11. HOUSING NEEDS IN ELKO AND WELLS, MOOR SUMMIT ACCESS ROAD, NO CONSTRUCTION-WORKER CAMP ALTERNATIVE[a]

	Elko Current Housing Stock	Housing Needs Elko		Wells Current Housing Stock	Housing Needs Wells	
		Number	% of Current		Number	% of Current
Peak Construction (Year 1993)	5200	311-497	6-10	500	63-101	13-20
Peak Workforce (Year 2000)	5200	462-648	9-12	500	141-179	28-36
Operation Workforce (Year 2010)	5200	284	3	500	147	29

[a] Range is for average construction workforce of 500 and peak construction workforce of 805.

Table 3-12. SERVICE DEMANDS ASSOCIATED WITH NON-PROJECT-RELATED AND PROJECT-RELATED GROWTH, MOOR SUMMIT ACCESS ROAD, NO CONSTRUCTION-WORKER CAMP ALTERNATIVE

	Elko				Wells			
	Exist	1993	2000	2010	Exist	1993	2000	2010
Housing	5200				500			
Demand of growth		1000	2700	6150		30	80	160
Project-related demand (average construction workforce)		311	462	284		63	141	147
School Enrollment	4995				432			
Additional enrollment		956	2341	5278		26	67	133
Demand for classrooms		38	93	212		3	7	14
Project-related enrollment (average)		135	232	185		28	79	96
Project-related classrooms (average)		6	10	8		3	8	10
Law Enforcement Officers	31				5			
Demand of growth		6	17	41		0	0	0
Project-related officers		1.5	2.3	1.5		0	0	0
Fire Protection (workers)	21				15			
Demand of growth		2.0	5.4	12.3		0.4	1.0	1.9
Project-related demand		0.6	0.9	0.6		0.8	1.7	1.8
Medical Care (doctors)	16				1			
Demand of growth		3.3	9.0	20.3		0.1	0.2	0.5
Project-related demand		0.7	1.1	0.8		0.0	0.4	0.4

with the peak total workforce in 2000. This demand falls by almost 200 units for the operation workforce which could be an impact if funds have been used unnecessarily. The City of Wells would experience substantial cyclical demand for housing units in the early years of the project.

3.3.5 No Action Alternative

Under the no action alternative, there would be no change in housing demand associated with power plant construction or operation workers. Housing demand and supply would continue to fluctuate in response to other factors.

3.4 COMMUNITY SERVICES

3.4.1 Schools

As a result of the increase in gold mining activity in the area, each of the elementary schools in the Elko County School District is currently at capacity. Two elementary schools constructed during the 1987-88 school year are already at capacity. New facilities would be required to accommodate additional students in the school district at both the elementary and junior high school levels. High schools have available capacity.

The addition of children to schools in a city the size of Elko is easier to accommodate than to schools in one the size of Wells. The reason is the number of existing classrooms in any given class level. For example, if ten second-grade students enrolled in Elko, one or two students could be distributed among the existing second-grade classrooms. However, those same students in Wells would all be placed in the one second-grade classroom in Wells, probably requiring the use of an additional classroom (Billings 1989). Relocatable trailers have been used in the study area in the recent past as a quick response to the rapid increase in demand associated with mining growth. Some of these relocatable trailers have been supplied to the school district by mining companies. The Superintendent of Schools has indicated that these relocatables are a temporary solution and

that permanent facilities are preferred to meet long-term demand. The school facilities or capital items are hardest to provide in order to support a growth in student enrollment. The operating expenses are provided in a form that increases as the enrollment increases (i.e., the State Distributive School Fund). However, there is no money immediately available for the construction of new facilities (Billings 1989).

For the purpose of this analysis, it is assumed that a new classroom is required for every additional 25 students in Elko (Billings 1989). This guideline is consistent with the current (1988-1989 school year) average classroom size in Nevada, which is 25.7 (L. Smith 1989). For every 10 new classrooms, new common facilities would need to be built, including multi-purpose, art, and music rooms. In addition, library and kitchen facilities would need to be expanded. Personnel would need to be hired, including one teacher for every classroom, as well as guidance counseling, secretarial, and custodial staff. For additional students in Wells, it is assumed that a new classroom would be required for every additional 10 students because it would be more difficult for the smaller number of existing classrooms to absorb the new students (Billings 1989). Classroom requirements will be overstated because high school-aged children would accompany construction and operation workers, and capacity is available in those levels in each city.

3.4.1.1 Proposed Action. Under the proposed action, the number of school-aged children would increase by 35 during the peak of construction, then by 88 in the year 2000, and then by 99 with the operation workforce in Elko (Table 3-13). Using the analysis criteria discussed previously, two classrooms would be required in Elko in the near future as a result of the proposed action (Table 3-6). The need would temporarily increase to four classrooms in 2000 and remain there for the operation workforce. These classrooms are in addition to the 93 classrooms in 2000 and 212 classrooms in 2010 needed to accommodate future non-project-related growth. The need for classrooms in Wells would be one classroom for 6 children during peak

Table 3-13. INCREASED NUMBER OF SCHOOL-AGED CHILDREN, PROPOSED ACTION

	Current[a] Children Elko	Increase in Elko		Current[a] Children Wells	Increase in Wells	
		Number	%		Number	%
Peak Construction (Year 1993)	4995	35	1	432	6	1
Peak Workforce (Year 2000)	4995	88	2	432	25	6
Operation Workforce (Year 2010)	4995	99	2	432	36	8

[a] 1989-1990 school year.

construction and three to four classrooms associated with the 25 to 36 children during peak workforce and the operational workforce. Common facilities could be required.

3.4.1.2 Proposed Access Road, No Construction-Worker Camp Alternative. The number of school-aged children in the school district would increase more substantially if a construction-worker camp were not provided. This is because many of the workers who choose to live temporarily in a construction-worker camp leave their families in cities such as Reno, Twin Falls, Salt Lake City, etc. This means that their children continue to attend schools in those cities. The workers then commute home every week-end to be with their families. When an inexpensive construction-worker camp is not available, workers are more likely to choose to relocate their families to the vicinity of the job site, resulting in a greater impact on local schools.

Under the proposed access road, no construction-worker camp alternative, the increase in school-aged children in Elko would range between 61 to 97 children during the peak construction year (Table 3-14). The low end of the range is associated with the average workforce. Because the peak workforce would occur during the summer months, the school-aged children associated with the peak would not require space in classrooms. The number of new children in the communities would drop during other, nonpeak construction years. The number of classrooms needed in Elko would be three throughout the peak construction year. Five classrooms would be needed during the peak total workforce. It is likely that the Elko County School District would provide relocatable trailers to accommodate the temporary peak demand. A trailer could be removed when the needed number of classrooms would drop from five to four during the operation phase (Table 3-8).

The City of Wells would see similar increases, with one classroom needed in the peak construction period, three needed for students

Table 3-14. INCREASED NUMBER OF SCHOOL-AGED CHILDREN, PROPOSED ACCESS ROAD, NO CONSTRUCTION-WORKER CAMP ALTERNATIVE[a]

	Current[b] Children Elko	Increase in Elko		Current[b] Children Wells	Increase in Wells	
		Number	%		Number	%
Peak Construction (Year 1993)	4995	61-97	1-2	432	10-16	2-4
Peak Workforce (Year 2000)	4995	113-149	2-3	432	29-35	7-8
Operation Workforce (Year 2010)	4995	99	2	432	36	8

[a] Range is for average construction workforce of 500 and peak construction workforce of 805.
[b] 1989-1990 school year.

associated with the peak workforce, and four during the operation of the power plant. Due to the transient nature of the construction workforce and the associated unpredictable demand for classrooms, relocatable trailers would probably be the method utilized by the School District to meet the construction phase demand.

3.4.1.3 Moor Summit Access Road, Construction-Worker Camp Alternative. Under this alternative, more school-aged children would reside in Elko and Wells (Tables 3-15 and 3-10). The number of classrooms required associated with project-related growth would increase from three to eight. Classrooms required in Wells would be two for peak construction to 10 for operation workforce. Common facilities would be required at that time.

3.4.1.4 Moor Summit Access Road, No Construction-Worker Camp Alternative. Need for classrooms to support project-related school-aged children would be greatest under this alternative (Tables 3-16 and 3-12). Demand for classrooms in Elko would be six for peak construction workers, and would increase to 10 for peak total workforce. Common facilities would be required at that time. Demand would then decrease to eight classrooms. In Wells, the demand for classrooms would increase from three for peak construction to 10 for operation workforce.

3.4.1.5 No Action Alternative. There would not be an increase in school-aged children associated with the power plant under this alternative. Classrooms would be required for non-project-related growth (Table 3-6).

3.4.2 Law Enforcement

The demand for law enforcement in the local communities would increase as a result of the proposed project because of the increase in population. The project proponent would employ security officers to patrol the power plant site.

Table 3-15. INCREASED NUMBER OF SCHOOL-AGED CHILDREN, MOOR SUMMIT ACCESS ROAD, CONSTRUCTION-WORKER CAMP ALTERNATIVE

	Current[a] Children Elko	Increase in Elko		Current[a] Children Wells	Increase in Wells	
		Number	%		Number	%
Peak Construction (Year 1993)	4995	78	2	432	16	4
Peak Workforce (Year 2000)	4995	175	4	432	66	15
Operation Workforce (Year 2010)	4995	185	4	432	96	22

[a] 1989-1990 school year.

Table 3-16. INCREASED NUMBER OF SCHOOL-AGED CHILDREN, MOOR SUMMIT ACCESS ROAD, NO CONSTRUCTION-WORKER CAMP ALTERNATIVE[a]

	Current[b] Children Elko	Increase in Elko		Current[b] Children Wells	Increase in Wells	
		Number	%		Number	%
Peak Construction (Year 1993)	4995	135-217	3-4	432	28-44	6-10
Peak Workforce (Year 2000)	4995	232-314	5-6	432	79-95	18-22
Operation Workforce (Year 2010)	4995	185	4	432	96	22

[a] Range is for average construction workforce of 500 and peak construction workforce of 805.

3.4.2.1 Proposed Action. The construction-worker camp would house a minimum of 520 workers at full occupancy. The population at the construction-worker camp would likely be higher than 520 because the RV spaces would allow a worker and a spouse, or a group of workers to occupy one RV space. The operators of the construction-worker camp would employ security officers. However, some of the residents of the construction-worker camp would visit the local communities during evenings and weekends, likely concentrating on Wells. Construction-worker camp operators have previously had a policy that if any worker residing in the construction-worker camp caused problems, the worker would be banned from the construction-worker camp. In addition, the security officers hired for the power plant would make periodic checks of the construction-worker camp grounds. In the past, these preventative measures have been sufficient to reduce law enforcement problems in the construction-worker camp to almost zero. For these reasons, this analysis assumes that law enforcement demand would be generated only by those workers who reside in the communities, since demand generated by the construction-worker camp is expected to be negligible.

In order to keep law enforcement coverage at a level of 2.0 officers for 1000 residents, the increase in population in Elko associated with the project would require the addition of 0.3 officers for the peak construction period, 0.7 officers for the peak workforce, and 0.8 officers during the operating phase, in addition to the officers required to serve the non-project-related growth (Table 3-6). The estimation of a fraction of an officer (e.g., 1.5) is meant to describe a situation of more demand than one officer can handle but not enough demand to justify the employment of a second officer. Elko would likely accommodate additional demand until approximately 2000, when one officer would be required. The City of Wells would need 0.2 and 0.3 officers during the same time periods if the service ratios were applied to the project-related population. However, the existing number of officers would allow sufficient coverage for existing population, the projected population growth, and the project-related

growth. Therefore, the City of Wells would not require additional law enforcement services.

3.4.2.2 Proposed Access Road, No Construction-Worker Camp Alternative. Under the proposed access road, no construction-worker camp alternative, all workers would reside in the local communities. The number of construction workers living in the communities would vary widely throughout the project life. It is assumed here that law enforcement officers would be hired based on the average annual workforce. It is unlikely that the hiring would respond to a peak, unless the communities noticed a drop in the level of service. The number of officers required to keep a standard level of service for project-related growth in Elko would be 0.7 during a peak construction year (with an average workforce of 500), 1.1 during the peak workforce, and 0.8 during the operation phase (Table 3-8). The City of Wells would need 0.1, 0.3, and 0.3 officers to remain at the same level of service. During peak construction periods, the service ratio would temporarily decline. The City of Elko could also need to acquire one new vehicle to maintain the existing level of service.

3.4.2.3 Moor Summit Access Road, Construction-Worker Camp Alternative. The Moor Summit access road, construction-worker camp alternative would result in increased need for police officers in Elko and Wells because of the increased number of construction and operation workers and their families residing in communities (Table 3-10). The number of officers required in Elko associated with the project would be 0.6 in 1993, 1.4 in 2000, and 1.5 in 2010. This is in addition to the estimated 6, 17, and 41 required during those same periods for non-project-related growth. The City of Wells would need 0.1, 0.5, and 0.8 officers in 1993, 2000, and 2010, respectively, to serve project-related inmigrants. It is unlikely that Wells would need to hire additional officers because of the existing high level of service.

3.4.2.4 Moor Summit Access Road, No Construction-Worker Camp Alternative. This alternative would result in the largest demand for police protection. Elko would require an estimated 1.5, 2.3, and 1.5 additional officers in 1993, 2000, and 2010, respectively, to accommodate project-related population demands. Additional vehicles would also be required. It is unlikely that Wells would need to hire additional officers because of the existing high level of service.

3.4.2.5 No Action Alternative. Under the no action alternative, there would be no need to increase the number of police officers and vehicles to serve the increased population associated with the power plant. Police officers would need to be hired to accommodate non-project-related growth (Table 3-6).

3.4.3 Fire Protection

There would be an increase in demand for fire protection as a result of the construction and operation of the proposed power plant. One component of the project that would require fire protection is the power plant itself. Measures have been built into the proposed action to protect the power plant. They include the construction of fire mains and fire hydrants, a water truck capable of pumping water, hand-held fire extinguishers, and a fire brigade would be formed of employees of the contractors and owners, patterned after a volunteer fire force. Usual emergency assistance would be given by the Nevada Division of Forestry, the Bureau of Land Management, and the cities of Elko and Wells. In addition to the power plant, the workers' residences in the construction-worker camp would require fire protection from these same preventative measures.

3.4.3.1 Proposed Action. This alternative includes residences in a construction-worker camp located at the project site. In addition to the fire mains, fire hydrants, hose stations, water truck, and fire brigade provided for protection of the power plant and construction-worker camp, the operators of the construction-worker camp would provide fire protection

equipment such as a fire detection system hooked up to each room. Fire-fighting services would also be provided by the same agencies as described previously for protection of the power plant. For this analysis, it is assumed that the increase in fire protection services is derived from the workers and families located in the local communities. To remain at a level of two firefighters for 1000 dwelling units, the City of Elko would need to obtain 0.1 firefighters to serve the peak construction workforce, 0.3 firefighters for the peak workforce, and 0.3 firefighters for the operation workforce to service the demand associated with additional project-related dwelling units in each phase (Table 3-6). It is unlikely that the City of Elko would need to hire an additional firefighter due to project-related demand because of the existing high level of service and because of the slight incremental increase in projected demand for service. The City of Wells would need to enlist 0.1, 0.5, and 0.7 volunteer firefighters to accommodate project-related demand during the same respective time periods to maintain a typical level of service for project-related growth. Because this increase in demand is so small, it is unlikely that Wells would require additional volunteers for the project-related population.

3.4.3.2 Proposed Access Road, No Construction-Worker Camp Alternative. Under this alternative, all workers would reside in the local communities. The fire departments would likely add firefighters in response to the demand associated with an average workforce. Using the service ratios described above, the City of Elko would need an additional 0.3 firefighters to serve the average workforce in a peak construction year, 0.4 fire-fighters during the peak workforce, and 0.3 firefighters during the operation phase (Table 3-8). The City of Wells would require 0.3, 0.6, and 0.6 volunteers during the same respective project phases to maintain the same high level of service. For the same reasons as stated for the proposed action, no additional firefighters would likely be required.

3.4.3.3 Moor Summit Access Road, Construction-Worker Camp Alternative. This alternative would result in higher fire protection demand than would the proposed action (Table 3-10). However, Elko would require less than one firefighter throughout the life of the project to maintain a typical level of service for project-related inmigration. The City of Wells could need to recruit one or two volunteers to serve the operation workforce.

3.4.3.4 Moor Summit Access Road, No Construction-Worker Camp Alternative. Impacts from this alternative are similar to those under the Moor Summit access road, construction-worker camp alternative. However, Wells could need to recruit the one or two volunteers by 2000 to accommodate the peak total workforce.

3.4.3.5 No Action Alternative. Under the no action alternative, no additional fire protection services would be required, associated with the proposed project. Fire protection services for non-project-related growth would be required (Table 3-6).

3.4.4 Medical Care

The proposed project would result in increased demand for medical care for construction and operation workers and their families. Victims of accidents which occur on the project site would need transportation to the nearest hospital, which is Elko County General Hospital, 90 miles distant. The project proponent would have a vehicle outfitted as a medical transport vehicle and additional back-up transportation to be used in case of an emergency. Victims of more routine accidents would likely be driven to Elko by the employer. An emergency medical crew would be formed on site, headed by the site safety officer and consisting of employees of the contractors and the owners. On-site facilities and services would include a first-aid room with a registered nurse or nurse practitioner available during working hours. In case of an emergency at night, the members of the emergency medical team that resided at the construction-worker camp could be called. In addition to medical care provided on site, increased demand

for care would be associated with construction and operation workers during nonwork hours and their families at all times. Depending on the location of residence and the severity of the medical concern, people would be served by the 16 physicians at the Elko County General Hospital, or the one doctor at the Wells Medical Center.

A social and economic impact survey was conducted by Woodward-Clyde Consultants (WCC) in October 1982 for the construction of the North Valmy Unit 1 power plant. In the survey, county officials and residents were interviewed for the purpose of identifying beneficial and adverse socioeconomic impacts associated with the construction of the power plant. The survey found that health care providers did not experience an increase in demand for services as a result of the Valmy Construction. Reasons suggested by the officials for the lack of increase in demand for medical services included:

- Presence of a registered nurse, paramedics, ambulance, and back-up van at the construction site that enabled routine matters to be handled at the site.

- Major accident cases were generally transported by air or ambulance directly to Reno.

- The transient worker population obtained most of their required medical services outside the study area, at facilities in the community of permanent residence.

3.4.4.1 Proposed Action. The residents of the construction-worker camp supplied on the project site would be at a distance of 90 miles from emergency medical facilities. The operators of the construction-worker camp would supply a nurse on duty during normal working hours. In case of emergency at night, the members of the emergency medical crew that resided at the construction-worker camp could be called. In a life-threatening situation, the Elko County General Hospital is 1.5 hours away.

The addition of project workers and their families to the City of Elko would exacerbate the difficulties associated with the current doctor shortage. The existing 16 physicians serve a County population of more than 26,000 residents. The resulting service ratio of 0.6 physicians for 1000 residents is below a typical ratio of 1.0 physicians for 1000 residents (Leistritz and Murdock 1981). Using the typical service ratio, Elko General Hospital could need to hire one more physician in order to serve the increased population associated with the proposed project in addition to those needed to accommodate non-project-related growth (Table 3-6). Elko County is currently experiencing difficulty attracting needed physicians and has formed a Physician Recruitment Committee.

Presently, one doctor serves the entire Wells population of 1400. With the addition of up to 681 operating workers and family members, the City of Wells would need to retain a physician's assistant or a nurse practitioner, according to the Wells physician. The existing medical building would need to be replaced (J. Smith 1989).

3.4.4.2 Proposed Access Road, No Construction-Worker Camp Alternative. Under the proposed access road, no construction-worker camp alternative, all workers would reside in the communities. This would provide the workers and their families with better access to medical care than if they resided at the project site. Applying the standard service ratio to the average population increase associated with the project, approximately the same number of additional doctors would be required as under the construction-worker camp alternative (Table 3-8).

3.4.4.3 Moor Summit Access Road, Construction-Worker Camp Alternative. This alternative would result in a higher demand for medical care (Table 3-10), but would have a similar impact as the proposed action.

3.4.4.4 Moor Summit Access Road, No Construction-Worker Camp Alternative. This alternative would result in the highest demand for medical service in Elko and Wells (Table 3-12) associated with power plant inmigrants, but the impacts would be approximately the same as with the proposed action.

3.4.4.5 No Action Alternative. With the no action alternative, there would be no increase in medical service demand associated with the proposed power plant project. Additional medical service would be required to serve non-project-related growth (Table 3-6).

3.4.5 Libraries

Use of the library services would increase with the construction and operation of the power plant because of the increase in population in the communities. This use is in addition to the additional use associated with non-project-related growth. The circulation of 160,000 volumes for the 26,790 county residents is approximately 6 volumes per person each year.

3.4.5.1 Proposed Action. With the proposed action, residents of the construction-worker camp would probably not utilize the services provided by the library system. However, use would increase if the Elko County Library System decided to reroute the bookmobile to the project site to serve the construction-worker camp residents. WCC's socioeconomic survey conducted in association with construction of the Valmy plant reported that the Humboldt County Bookmobile began its service to Valmy and Golconda during the peak construction period in response to the increase in the Valmy-area population. The bookmobile staff reported a large loss of books, which they attributed to the Valmy workers (WCC 1982).

Increased usage of the library services would result from the increase in the population in the communities of Elko, Wells, and Twin Falls. The current annual average circulation in Elko County is 6 volumes per person. Under the construction-worker camp alternative, population in the

communities would increase by 448 at peak construction, to 1170 at peak workforce, and 1362 during the operation phase. Approximately half of this increase would be experienced in Twin Falls County. The increased annual circulation in Elko County would be approximately 1350, 3510, and 4086 during each of the respective time periods, which amounts to a 1 to 3 percent increase over current circulation. In addition, the children that accompany the workers would utilize the children's programs that are provided by the Elko and Wells Branch Libraries.

3.4.5.2 Proposed Access Road, No Construction-Worker Camp Alternative. Under the proposed access road, no construction-worker camp alternative, impacts similar to those of the proposed action would occur. The impacts would be greater during the construction phase as a result of the increased population and number of children. The population could increase to an average of about 700 in Elko County for an increase in circulation by 4200 volumes. At the same time, the number of school-aged children would increase by 100 over the number associated with the proposed action, resulting in increased demand for children's programs at local libraries.

3.4.5.3 Moor Summit Access Road, Construction-Worker Camp Alternative. The library usage under this alternative would be similar to that under the proposed action except that the West Wendover branch would also be utilized. The Elko County Library System would have more use because all workers would live in the county.

3.4.5.4 Moor Summit Access Road, No Construction-Worker Camp Alternative. The library usage under this alternative would be similar to that under the proposed access road, no construction-worker camp alternative, except that the West Wendover branch would also be utilized. The Elko County library system would have more use because all workers would live in the county.

3.4.5.5 No Action Alternative. Under this alternative, there would not be an increased demand for library services in Elko County associated with the proposed power plant. Increased demand would be associated with non-project-related growth.

3.4.6 Water Supply

There would be an increased demand for water supply associated with the increase in population resulting from project construction and operation.

3.4.6.1 Proposed Action. Under the proposed action, only the workers residing in the communities would increase demand for the local water systems. The residents in the construction-worker camp would be served by the groundwater being used for the power plant (discussion is provided in Section 5.5.2.1 of the EIS). The increase in population in Elko would range from 1 to 3 percent over the course of the project. The water system would be adequate to serve the anticipated increase in population in Elko associated with the project, depending on the growth in population that occurs in Elko between 1989 and 1991. The City will need to accommodate water demand associated with non-project-related growth.

The population in the City of Wells would increase by 11 percent over current population during the operation phase. If the improvements that the City of Wells has planned do occur, and if the conservation measures do save a significant amount of water, the City could support this increased population. The City could not support the additional population without the planned improvements and conservation.

3.4.6.2 Proposed Access Road, No Construction-Worker Camp Alternative. The water demand associated with this alternative would be higher because of the higher number of local residents. The population increase in Elko would range from 2 to 5 percent, which could be served by the existing system. The population increase in the City of Wells would be larger during the construction period than with the proposed action, but would

still reach a peak increase of 11 percent over current population during the operation phase. Thus, impacts in the City of Wells under this alternative would be similar to those identified for the proposed action.

3.4.6.3 Moor Summit Access Road, Construction-Worker Camp Alternative. This alternative would result in a population increase of 2 to 5 percent in Elko and 5 to 28 percent in Wells over current population. Impacts to the water system would be similar to the impacts under the proposed action.

3.4.6.4 Moor Summit Access Road, No Construction-Worker Camp Alternative. This alternative would result in a population increase of 5 to 10 percent in Elko and 11 to 32 percent in Wells over current population. Impacts to the water system would be similar to the impacts under the proposed action.

3.4.6.5 No Action Alternative. If the proposed project were not built, the additional water demand associated with the construction and operation workforces would not occur. Planned water supply improvements in each of the cities would occur regardless of whether or not the proposed project is constructed and operated. Increased demand would be associated with non-project-related growth.

3.4.7 Sewer Supply

There would be an increased demand for wastewater treatment associated with the construction and operation workforces and their families.

3.4.7.1 Proposed Action. There would be an increase in demand for wastewater treatment associated with project workers and their families residing in the communities. The wastewater associated with the construction-worker camp and power plant would be transferred to an aeration pond on site and then placed in one of the evaporation ponds associated with the power plant. Once planned sewer facility improvements occur, the City of Elko could serve the wastewater needs of non-project-related growth and the

needs of the construction and operation workforces residing within the City. The City of Wells would not be able to accommodate the demand associated with the increased population with the existing system. The City anticipates that the installation of meters on the water system will decrease the water use and, consequently, the amount of wastewater treated daily. If the wastewater amount does not decrease, improvements to the system would be required to accommodate the workers and their families.

3.4.7.2 Proposed Access Road, No Construction-Worker Camp Alternative. The demand for sewer service associated with this alternative would be higher than that under the proposed action. However, the conclusions would be the same under each alternative. The City of Elko would be able to serve the non-project-related growth and the workers once the planned facility improvements are completed. The City of Wells would require improvements to the sewer system to accommodate the growth if wastewater generated by City residents does not decrease.

3.4.7.3 Moor Summit Access Road, Construction-Worker Camp Alternative. This alternative would result in higher sewer demand in Elko and Wells than the proposed action would. However, the conclusions concerning impacts would be the same as for the proposed action.

3.4.7.4 Moor Summit Access Road, No Construction-Worker Camp Alternative. This alternative would result in the highest demand for sewer service in Elko and Wells. The conclusions regarding impacts would be the same as for the proposed access road, no construction-worker camp alternative.

3.4.7.5 No Action Alternative. If the power plant were not built, there would not be an increase in sewer treatment demand associated with the proposed power plant. Planned improvements to the systems would be made regardless of whether or not the power plant was built. Increased demand would be associated with non-project-related growth.

3.4.8 Solid Waste Disposal

There would be an increase in the demand for disposal service associated with the workforce and their families. The proposed action includes a Class III landfill to dispose the waste from construction of the power plant (i.e., no human or hazardous waste would be disposed).

3.4.8.1 Proposed Action. There would be demand for solid waste disposal associated with construction workers and operation workers. A greater proportion of the solid waste associated with the construction workers would need to be disposed of in Wells because the solid waste generated at the construction-worker camp would be disposed of by the City of Wells Sanitation Company. The City of Elko can accommodate the additional solid waste that would be generated by the workers who choose not to reside in the construction-worker camp, in addition to that generated by non-project-related growth, during the early construction phase. Solid waste disposal for the City of Elko would be possible for 3 to 5 years after construction began, after which a new landfill would need to be developed. The City of Wells could only service the workers and their families if the proposed expansion of the landfill site is approved by BLM and developed.

3.4.8.2 Proposed Access Road, No Construction-Worker Camp Alternative. The demand for solid waste disposal under this alternative would be larger than under the proposed action because of the increased number of dependents who accompany workers with the proposed access road, no construction-worker camp alternative. However, the City of Wells would have less solid waste to handle during the construction phase than it would under the proposed action. The conclusions would be the same as for the proposed action. The City of Elko could meet the increased demand during the early construction phase. The City of Wells would need to have additional landfill capacity approved and developed before it could accommodate the increased demand.

3.4.8.3 Moor Summit Access Road, Construction-Worker Camp Alternative. This alternative would result in higher demand for solid waste disposal in Elko and Wells than the proposed action would. However, the conclusions regarding impacts associated with project-related growth are the same as with the proposed action.

3.4.8.4 Moor Summit Access Road, No Construction-Worker Camp Alternative. This alternative would result in the highest solid waste disposal demand in Elko and Wells. The conclusions regarding potential impacts are the same as those with the proposed access road, no construction-worker camp alternative.

3.4.8.5 No Action Alternative. If the proposed power plant were not built, there would not be an increased demand associated with the workforce. Increased demand would still be associated with non-project-related growth.

3.5 PUBLIC FINANCE

3.5.1 All Alternatives

The primary sources of revenue generated in the area would be the taxes associated with the construction and operation of the power plant and the increased number of high incomes in the area. For this reason, all alternatives would have similar effects. The tax revenues are discussed below. Income impacts are discussed in Section 3.1.

3.5.1.1 Property Tax. This proposed project is a project by a private entity and does not cross the Elko County line. For that reason, it would not appear to be a centrally assessed property and would be valued and taxed within Elko County. However, preliminary discussions concerning the proposed project that have occurred at the State Legislature level appear to view the project as if it were one proposed by a public utility. The State Legislature has the power to decide whether or not a property should

be centrally assessed and how the value should be distributed among the counties. The Thousand Springs Generating Company does not currently and will not in the future own any transmission lines, so the line-mile distribution of value would be unlikely. However, value distribution has also occurred based on relative populations in all the counties. It cannot be assumed that the property would be valued and taxed by Elko County.

To estimate the amount of property tax that would be involved, the estimated capital investment for the first unit in the year 1994 is $453.4 million, including interest and escalation to the year 1994. This construction cost is reduced by the 1988-89 cost-to-value conversion factor for electric companies. This current conversion factor is 0.9223 and the resulting value is $418.2 million. The assessed value of the property is 35 percent of the value, or $146.3 million. The current property tax rate in Elko County is 1.8535. For the purpose of analysis, it is assumed that the tax rate would be approximately $2 per $100 of assessed value. The resulting property tax would be $2,900,000 for the first unit in its completion year (Table 3-17). Approximately 70 percent of the tax revenue would be dedicated to the school district, including $730,000 for capital projects. Property tax of a lesser amount would be levied during the construction years, depending on the construction cost incurred. Elko County could receive less of a beneficial impact if the project were assessed as a centrally assessed property (Table 3-17).

3.5.1.2 Sales and Use Tax. Sales and use tax revenues would be generated during both the construction and operation phases. It is estimated that sales and use taxes associated with the materials used during the construction of the first power plant unit would be $8,747,600 (in 1988 dollars). In addition, sales tax revenues would be generated as construction and operation workers spent their salaries. Sales taxes for major purchases would likely be divided between Elko County, Salt Lake City, and Twin Falls, Idaho, as described in Section 2.2. Approximately $2.2 million of the sales tax revenue from the first unit would be designated for Elko

Table 3-17. TAX REVENUES (1988 $) GENERATED FOR ELKO COUNTY (THOUSANDS OF DOLLARS)

	Taxed as Private Entity		Taxed as Centrally Assessed Property	
	First Unit (1994)	Four Units (2000)	First Unit (1994)	Four Units (2000)
Property Tax				
Elko County	870	3,480	22	88
School District	2,030	8,120	51	204
TOTAL to Elko County	2,900	11,600	73	292
Sales & Use Tax				
Elko County	3,500	14,000	3,500	14,000
School District	2,200	8,800	2,200	8,800
TOTAL to Elko County	5,700	22,800	5,700	22,800
Total Revenues				
Elko County	4,370	17,480	3,522	14,088
School District	4,230	16,920	2,251	9,004
TOTAL to Elko County	8,600	34,400	5,773	23,092
Project-Related Service Demand Requirements (2000)				
Elko County				
Elko police officer		31		31
Possible new landfill		N/A		N/A
School District				
4 classrooms in Elko		3,000[a]		3,000[a]
3 classrooms in Wells				

Source: Paul Billings, Elko County School District. Estimate for 500 children.
N/A = Not available.

County School District, $3.4 million would be designated to the County and its cities, and $85,000 would be distributed to Elko County from the State's share of $3 million, based on its population (2.5 percent of the State's population). The $3.4 million would be considered part of the "capped" revenues. The revenues would be allowed to increase by a state-designated percentage. If the supplementary sales tax revenues increased by this magnitude, the property tax rate in the County would decrease.

3.5.1.3 Railroad Car Lease. As part of the proposed project, railroad cars would be leased to transport coal and would be subject to a tax. The personal property tax would be applied based on the distance that the cars travel from Utah or Wyoming to Nevada; the value of the cars would be distributed among the three states based on the miles traveled in each state. Revenue would be generated for the state governments.

3.5.1.4 Total Revenues Generated. The total revenues generated by the proposed project (in 1988 dollars) for Elko County would be $5.7 million in sales and use tax for every unit that was constructed and $2.9 million in property tax that would accrue annually for each unit constructed. By the year 2000, when most of the additional community services would be required, revenues that would be paid include a total of $22.8 million in sales and use tax for the four units constructed and $11.6 million annually in property tax for the four units (Table 3-17). If the proposed project were taxed as a centrally assessed property, the annual property tax revenues would decrease to approximately $290,000, including $87,000 not dedicated to the schools. The non-school-related annual revenues could be used to cover the salary of a police officer in Elko ($31,000). Therefore, the revenues generated by the project are sufficient to cover additional operating costs, even if the project is treated as a centrally assessed property. The $8.1 million annual property tax dedicated to the school and the $8.8 million from sales and use tax for four units could be used to build facilities for four classrooms in Elko and three classrooms in Wells by 2000 under the proposed action, and 10 classrooms in Elko and eight

classrooms in Wells under the Moor Summit access road, no construction-worker camp alternative. Approximately $3.4 million of the sales and use tax revenues would be directed to the county and its cities during the construction period of the first unit and could be used for construction of sewer improvements in Wells, and development of a new landfill in Elko County. The amount of tax revenues (property tax and supplemental state sales tax) would only be able to increase by a certain percentage. The minimum increase of 6 percent would result in an additional $230,000 in revenues, based on 1988 budgets for property and other taxes. This amount could increase more if the state allows a higher percentage of growth (allowed growth in 1988 was 16 percent).

Approximately 75 percent of the construction cost of the first unit would be spent by the end of 1992. This would result in $215,000 in property tax revenues and $6.5 million in sales tax revenues, including $1.65 million for Elko County School District. Approximately 95 percent of the construction cost of the first unit would be spent by the end of 1993. Approximately two classrooms would be needed in Elko and one classroom would be needed in Wells in 1993 to accommodate project-related growth.

3.5.2 No Action Alternative

Under this alternative, tax revenues associated with the power plant would not be generated for Elko County and the State of Nevada.

3.6 SOCIAL CONDITIONS

As suggested in the BLM Guide to Social Assessment (the Guide; Branch et al. 1982), the assessment of project-related environmental consequences to existing social conditions began with an evaluation of direct project inputs into the following areas: people, jobs, income, resource availability or cost, organizations and regulations, and health and public safety. A separate evaluation was made for each alternative, for each community studied.

It was concluded that there would be no project-related changes to organizations and regulations.

Project-related changes in the other areas were assessed for potential impacts to the three descriptive components (community resources, community social organization, and indicators of wellbeing) for each community, again by consideration of impacts to the indicator factors from the Guide listed above in Section 2.6.

3.6.1 Proposed Action

3.6.1.1 City of Elko. No impacts to social organization in the City of Elko appear likely. With the current mining-related population increase, the community is experiencing growth twice as great and 10 times as fast as the maximum growth that would be associated with construction and operation phases of the proposed action (1 to 2 percent over 16 years). In addition, the TSPP-associated growth is much more predictable and, in the operation phase, more stable, than mining-related growth. Distribution of resources and power has stayed stable during the current growth period, outside ties are already established, and there is cooperative support by residents for City government efforts to respond to the growth. Residents have noted some diversity of values among some of the mining management people; that is, they are seeing some new kinds of people in the City. They expect that the mining management people will eventually move on, but TSPP operations people would sustain that diversity in their place. Elko residents do not expect construction workers to affect the diversity, since construction workers are already well-represented in the City. Patterns of personal interaction would be unlikely to change significantly due to TSPP-related growth; interaction patterns have already adjusted to the larger population size that came with the mining-related growth.

There could be some strains on community resources, and consequent diminution of individual and community wellbeing during the growth

period. City officials and residents who were interviewed consider that TSPP-associated impacts would be minor compared to the effects of the current boom. Their optimism comes from a pro-development stance, and also a perception that the City is responding well to the current growth. Citizens express confidence that the leadership is competent, and that the existing organizational structure is adequate to respond to the demands placed on the community by the current growth. Although existing facilities and services are strained by the current population increase, citizens perceive that response is underway. By the time that impacts of TSPP would begin to be felt, additional infrastructure, facilities, and diversified services will be in place.

Despite the optimism of Elko officials and residents, there remain some areas, such as recreation facilities, where present plans are not adequate to meet projected demand. The City may continue to be frustrated in its effort to build up medical personnel. Some of the planned growth in other areas may take longer than expected. Thus some short-term impact to citizens' access to resources is likely during construction phases of TSPP. Such deficiencies in services and facilities may affect some segments of the population, such as those on fixed incomes, more severely and over a longer time period than others. These segments, in particular, may feel their personal wellbeing diminished as a consequence of TSPP.

3.6.1.2 City of Wells. Impacts to Wells would be directly related to population increase, projected to be 2 percent within the first 2 years of construction, 7 percent by the year 2000, expanding to an increase of population by approximately 11 percent when final buildout would be complete and all units operating. In the peak workforce years, Wells could experience significant short-term impacts on some community resources, with associated diminution of social wellbeing. There could be some long-term beneficial effects on social wellbeing.

Although City government and residents are pro-development, Wells has no prior experience with development on the scale that would be associated with TSPP. They would have a greater opportunity with TSPP than Elko did with the mining boom to plan for a population increase and associated demands on community resources. They could use knowledge of Elko's experience in their planning efforts. However, they might not be able to avoid an after-the-fact response similar to Elko's because of legislative limitations on spending, and because of inability to attract private development in advance of actual population growth. Developers and entrepreneurs could wait to see if that analysis is correct before they invest in new housing construction or open retail outlets in Wells.

There would be insufficient housing to meet demands during peak work-force years and final buildout unless additional housing was constructed. Housing starts could be curtailed if water supplies and sewage treatment facilities were inadequate. If Wells is successful in reducing residential water usage and associated wastewater production as a result of the forth-coming installation of meters, the City could absorb the expected increase in population without expanding water and sewage treatment facilities. If not, Wells could face the same limitations on construction of new housing that temporarily halted Elko's response to the housing shortage generated by the mining boom there. A housing shortage would have a negative impact on the personal wellbeing of some Wells residents if they choose to leave, or are forced out of, homes that could be lucratively rented or sold to incoming workers with higher salaries. Elderly people on fixed income are likely to be most affected by a housing shortage. City officials are aware of concern about that issue from the elderly in Wells.

Wells does not currently have plans to expand recreational facilities, and a shortage of these would clearly result even from the small population increase projected for the initial phase of TSPP construction. Unless and until additional facilities are provided, perceptions of personal and com-munity wellbeing would be diminished as a result of inadequate facilities.

Wells' share of the construction jobs expected to be filled locally, plus the increasing number of support jobs that would be generated and filled locally as the City population grows during the years through full buildout, would result in a net increase in employment. This would benefit both personal and social wellbeing in Wells.

One of the long-term benefits that Wells residents anticipate from population growth would be increased diversity of shopping opportunities in the City. In the short term, they could suffer a negative impact on personal wellbeing if prices rose and supplies became scarcer until businesspeople responded to increased demand. Even the maximum projected population increase would be unlikely to induce the entrance of chain stores, and thus TSPP could not be expected to alter shopping patterns significantly.

Wells residents expect that they could see an increase in crime and experience a diminished sense of security as a consequence of population increase. However, they feel that the construction-worker camp would diminish this potential effect, which is associated in their minds more with single construction workers than with families of construction and operation workers who could move into town. They acknowledge that police coverage in town would be more than adequate to handle a substantial population increase.

Based on Elko's experience with the mining boom, it is anticipated that social organization in Wells would not change drastically as a result of TSPP-induced growth. Governmental structures of the two cities are similar, and Elko's worked for its much larger population size, and has not changed in response to the boom. Wells "doers" have demonstrated that they can work together despite disagreements and through changing administrations because they share the goal of economic development for the City. Residents do not anticipate that an influx of construction workers will

affect community diversity, because many Wells residents already work in construction. The operation workforce may bring in a different group, but Wells residents point out that many of their townspeople are already outsiders, who bring in values and life experience from different communities. At least half of the businesses in Wells are owned and operated by people who have come in from other communities, according to interviewees. These outsiders have been successfully integrated into the political and economic power structure. Some change in patterns of personal interactions may result from the overall population increase of 11 percent. However, the increase will be gradual, and the total community size still would be under 2000 people. Based on the fact that residents commented in 1989 that they had not noticed the 15-percent population increase since 1980, they may not notice the 11-percent increase over a 20-year period, at least not as it affects patterns of personal interaction.

It appears that tax revenues would be ample to fund the significant expansions of school facilities and minor expansions in police and fire-fighting capabilities that would be required. While the already limited medical facilities would be taxed further, this would be unlikely to change existing behaviors of residents, who already travel for specialty services.

The small-town, rural qualities of life that are valued in Wells could be changed some by an overall 11-percent increase in population, but such a change would not be significant, to judge by Elko. Residents of that city, now approximately ten times as large as Wells, boast of the same desirable qualities of small-town life in their city as Wells residents do. And this is after a population increase in Elko much greater in speed and magnitude than what is expected in Wells from TSPP.

3.6.2 Proposed Access Road, No Construction-Worker Camp Alternative

3.6.2.1 City of Elko. No long-term significant impacts to social organization or social wellbeing of Elko residents would likely occur, because the long-term population increase associated with this alternative

is identical to that associated with the proposed action. During the period when a peak workforce were present, Elko could suffer the same stresses on social wellbeing that have characterized the years of the mining boom, primarily associated with a housing shortage and corresponding inadequacies in public facilities. A major difference would be the scale of the disproportion between supply and demand, because the response to the mining boom would have increased Elko's infrastructure significantly by the time the TSPP peak workforce is in place. Thus the shortages all around would be less severe. Elko would be able to draw upon its experience with the mining boom to consider costs and benefits inherent in responding to the short-term needs for housing and associated services during peak workforce years at TSPP.

3.6.2.2 City of Wells. Long-term impacts to Wells would be the same as those identified for the proposed action, that is, some long-term beneficial effects on social wellbeing, and no major impacts to social organization. In addition, there would be impacts related to a population increase of 4 percent to 6 percent during the initial peak construction years, and an increase of 9 percent to 12 percent during the peak workforce years over current population. During both of these periods, Wells could experience significant short-term impacts on some community resources, with associated diminution of social wellbeing.

Housing demands in the initial peak construction years and in peak workforce years could not be met with existing housing in Wells. As discussed in previous sections, if Wells is not limited by water supply and sewage treatment capability, there would be no institutional constraints to housing starts. However, Wells might be unable to attract development in advance of actual population growth, even though the projected growth for this alternative should make the City more attractive to developers. Consequences of a housing shortage, if it occurs, would be the same as those indicated under the proposed action.

A greater negative impact on personal wellbeing could result from this alternative, because Wells residents feel that the presence of single construction workers in the community would lead to greater incidence of crime and a lesser sense of security in their homes than would be the case if such workers resided at the plant site. This effect would be limited to the construction phase of the project.

As with the proposed action, it appears that tax revenues would be ample to fund the even greater expansions of school facilities that would be necessitated by this alternative, and the still minor expansions in police and firefighting capabilities that would be required. Strains on community facilities would be felt earlier under this alternative, but the long-term effects would not differ.

3.6.3 Moor Summit Access Road, Construction-Worker Camp Alternative

3.6.3.1 City of Elko. This alternative would result in a greater population increase in the community of Elko than with the proposed action. The population increase associated with operation workers at full buildout would be 5 percent of current population and 2 percent of projected population in 2010. Impacts to community structure and social wellbeing would be similar to those of the proposed action.

3.6.3.2 City of Wells. This alternative would result in a larger population increase, particularly with permanent, operation workforce, than with the proposed action. The City of Wells population would increase by 28 percent and 21 percent over projected population in 2010. This would intensify social effects described for the proposed action. However, the City of Wells civic leaders have expressed a preference for the Moor Summit acces road alternative because they believe that this access road would result in greater economic benefit to their community.

3.6.4 Moor Summit Access Road, No Construction-Worker Camp Alternative

3.6.4.1 City of Elko. With this alternative, the City of Elko would receive a greater, fluctuating influx of construction workers and their families in the short term than they would with the Moor Summit, construction-worker camp alternative. However, the long-term, permanent resident increase would be similar to the Moor Summit, construction-worker camp alternative and would result in similiar effects to social structure and wellbeing.

3.6.4.2 City of Wells. The fluctuating population increase anticipated in the City of Wells would be greater with this alternative than with the Moor Summit, construction-worker camp alternative. In addition, the magnitude of increase is greater than that with the proposed access road, no construction-worker camp alternative. This would result in even greater stresses to the social structure and wellbeing.

3.7 OTHER POTENTIALLY AFFECTED COMMUNITIES

3.7.1 Twin Falls

Impacts on the City of Twin Falls from the proposed power plant would vary depending upon which access road is built. The proposed action would make Twin Falls approximately 100 miles from the plant site. The Moor Summit alternatives would result in a commute of approximately 140 miles from Twin Falls to the project site. Twin Falls is expected to be affected only if the proposed access road or the Brush Creek Alternative were developed. Table 3-18 presents the number of workers, the number of school-aged children, and the total population increase anticipated in Twin Falls from the proposed action and the proposed access road, no construction-worker camp alternative.

Project-related population in Twin Falls would not result in more than a 5-percent increase in total population during any of the analysis years. Under the proposed action, population increases would range from 1

Table 3-18. INCREASE IN POPULATION, TWIN FALLS[a]

Year	1993		2000		2010	
	CWC[b]	NCA[c]	CWC	NCA	CWC	NCA
Number of Workers	120	270-432	279	429-591	269	269
Number of School-Aged Children	68	117-188	160	209-280	175	175
Total Population Increase	269	641-1030	652	1024-1413	722	722
Total Projected Population of City (without proposed action)	29,331	29,331	31,546	31,546	34,710	34,710
Project-Related Population as Percent of Total Projected Population	<1	2-3.5	2	3-4.5	2	2

[a] Range is for average construction workforce of 500 and peak construction workforce of 800.
[b] Proposed action (Construction-worker camp).
[c] Proposed access road, no construction-worker camp alternative.

to 2 percent. With the proposed access road, no construction-worker camp alternative, the increases would range from 2 to 4 percent.

This new population represents 120 new households in 1993 and 279 new households in 2000 in Twin Falls with the proposed action, and 270 to 591 households with the proposed access road, no construction-worker camp alternative during the same time period. Households include single-person households and families. Single persons might consider motel accommodation and sharing of housing. Therefore, the housing stock required would not necessarily equal the total number of households stated above. The rental housing market in Twin Falls is expected to improve after 1990 with the commencement of construction on two subdivisions. Further construction is anticipated in the 1990s. The influx of new population in 1993 is not likely to strain the housing market, although the 279 households anticipated to move to Twin Falls by 2000 may encounter a housing shortage, if additional housing in six other subdivisions is not developed. The proposed access road, no construction-worker camp alternative would cause the influx of a very large number of households, which the City might find difficult to accommodate.

A minimum of 68 school-aged children in 1993 and a maximum of 175 children in 2010 would be added to the City schools under the proposed action. In 1989, total school enrollment in the City went up by 87 students or 1.28 percent over the last year. If the enrollment increases at the current rate, it will be 7209 by 1993 and 7822 by 2000. With the proposed action, the enrollment for the same years would be 7277 and 8031. This implies that the proposed action would increase the school enrollment by almost 1 percent in 1993 and 2 percent in 2000. The proposed access road, no construction-worker camp alternative would increase the school enrollment levels much more. The schools are currently near capacity, and in the absence of any expansion of classroom space and personnel, the influx of project-related school children could strain the school system in Twin Falls.

Other community services are not expected to be impacted much by the proposed action. The service ratio for law enforcement would change from 1.65 to 1.64 in 1993 and from 1.55 to 1.52 in 2000, with the influx of new population relating to the proposed action. Similar minor impacts are anticipated on fire protection services and medical care. The utility services are presently under no constraints. Water supply is plentiful.

The one aspect of public finance that would receive impacts from the proposed action/alternatives would be increase in retail sales and spending in the economy of Twin Falls. The new population would spend locally on housing, consumer goods, and transportation. This would generate sales tax revenues, part of which would be cycled through the City's economy. Some indirect jobs could be created due to the influx of new population.

While the influx of new population due to the proposed action is very small considering the large size of the City of Twin Falls, the present constraints on housing and school capacities could pose some problems in 2000, if housing stock and school capacities are not increased. Other community services are not expected to be affected by this small influx as they are currently under no constraints. The proposed access road, no construction-worker camp alternative could affect all aspects of living in Twin Falls.

3.7.2 Jackpot

Jackpot, like Twin Falls, is expected to receive impacts only if the proposed action or the Brush Creek Alternative access road were built. The Moor Summit alternatives would increase the commute distance and travel time to Jackpot to make it less attractive to the workers as a potential place of residence. Table 3-19 gives the anticipated influx of population into Jackpot resulting from the proposed action and the proposed access road, no construction-worker camp alternative.

Table 3-19. INCREASE IN POPULATION, JACKPOT[a]

Year	1993		2000		2010	
	CWC[b]	NCA[c]	CWC	NCA	CWC	NCA
Number of Workers	8	18-29	26	36-47	30	30
Number of School-Aged Children	4	8-13	14	19-24	20	20
Total Project-Related Population	18	43-68	61	86-111	82	82
Total Projected Population (without proposed action)	2164	2164	3246	3246	5981	5981
Project-Related Population as Percent of Total Projected Population	<1	2-3	2	3	1	1

[a] Range is for average construction workforce of 500 and peak construction workforce of 800.
[b] Proposed action (Construction worker camp).
[c] Proposed access road, no construction-worker camp alternative.

Project-related new population in Jackpot would not result in more than a 3.5-percent increase in the community population during any of the years analyzed. For most of the time, the influx would represent 1 to 2 percent of the total population and the proposed access road, no construction-worker camp alternative would result in a population increase of 2 to 3 percent.

This new population represents 8 new households in 1993 to 30 new households in 2007 in Jackpot with the proposed action, and 18 to 47 households with the proposed access road, no construction-worker camp alternative between 1993 and 2000. As these households include single-worker households who could opt for motel accommodation and sharing, the total number of housing units required would not necessarily equal the total number of households. Low availability of rental housing could prove a constraint, although motel room availability is satisfactory.

A proportion of the new population would be school-aged children. It is estimated that 4 to 20 school children would be added to the local school from 1993 to 2010 through the influx of population associated with the proposed action. Under the proposed access road, no construction-worker camp alternative, 8 to 24 school children would require school facilities. Presently, there is excess capacity in the school at Jackpot. However, if the enrollment continues to grow at last year's rate, this capacity would be filled up by 1995. In 1993, there would be room for the project-related school children. However, by 2000, if more facilities and staff are not added, the school would be required to work over capacity with or without proposed action.

Impacts on other community services are not expected to be large. The service ratio for law enforcement would stand at 1.85 in 1993 without proposed action and at 1.83 with proposed action, if no additional officers are added before 1993. The ratio in 2000 would be 1.23 without proposed action and 1.21 with proposed action. Since the population increase in

Jackpot associated with the proposed action would be small, most community services would not be affected much. However, coupled with the non-project-related population growth, the increase could put strain on waste-water disposal and water supply systems.

Fiscal impacts on the local economy are not expected to be large. Except for spending on housing and some food in Jackpot, workers and their dependents would need to go to Twin Falls for most other requirements, as Jackpot does not offer many shopping opportunities.

3.7.3 Wendover

The communities of West Wendover and Wendover would receive impacts from the construction and operation of the proposed power plant if the Moor Summit access road were developed. Via this route, the communities would be about 71 miles from the plant, whereas if the proposed access road or the Brush Creek alternatives are developed, the communities would be over 100 miles from this plant. Table 3-20 presents the number of workers that would reside in Wendover, the total population increase that would result due to the proposed power plant, and the number of school-aged children that would be added to Wendover communities as a part of this population influx.

Approximately 14 percent of the construction workforce and 17 percent of the operations workforce would settle in the communities of Wendover. These workers and their dependents would number approximately 76 in 1993, 185 in year 2000 and 204 in 2007. This new population would increase population by 2 to 4 percent of the projected total populations in the two communities. The increase associated with the Moor Summit access road, no construction-worker camp alternative is much larger, ranging between 4 and 8 percent in the year 2000.

This new population represents 34 new households in 1993 to 79 new households in year 2000 with the proposed action and 76 to 167 new

Table 3-20. INCREASE IN POPULATION, WENDOVER[a]

Year	1993		2000		2010	
	CWC[b]	NCA[c]	CWC	NCA	CWC	NCA
Number of Workers	34	76-122	79	121-167	76	76
Number of School-Aged Children	19	33-53	46	59-79	49	49
Total Population Increase	76	182-292	185	290-400	204	204
Projected Population of Communities Without Project	4363	4363	5132	5132	5791	5791
Project-Related Population as Percent of Total Population	<2	4-6	3.5	5-7	3	3

[a] Range is for average construction workforce of 500 and peak construction workforce of 800.
[b] Moor Summit access road, construction-worker camp alternative.
[c] Moor Summit access road, no construction-worker camp alternative.

households with the Moor Summit access road, no construction-worker camp alternative. As these new households include single-worker households who could opt for motel accommodation and sharing, the total number of housing units required would not necessarily equal the number of households stated above. If new housing is not added before 1993 and the population continues to grow at the present rate, the apartments presently available would prove insufficient for the non-project related population increase by 1993. However, if the population growth rate were to decline between 1989-93, rental housing would be available for the project-related population. Motel room availability appears satisfactory except for holidays and special event periods.

The schools in the two communities are currently at capacity. Between 1993 and year 2000, 19 to 46 school-aged children would be added to the local schools due to the proposed power plant. Under the Moor Summit access road, no construction-worker camp alternative, 33 to 79 school children would require school facilities over the same years. In view of the level of utilization of school capacities currently, if more facilities and staff are not added by year 1993, the local schools would be operating over their capacities.

Impacts to other community services would be relatively smaller. The service ratio for law enforcement would be 2.1 in 1993 and 1.8 in year 2000 without the project-related population, and 2.1 and 1.7 in the same years with the project-related population, if more officers are not added. In view of the reported water supply problems currently being faced, water supply is an aspect that might receive impacts from the project-related population.

The local economy would benefit from the spending on housing, food and transportation by the project-related population, although part of the income could get spent in Salt Lake City and Elko.

3.8 SENSITIVITY ANALYSIS

This section discusses the sensitivity of the socioeconomic analysis to the assumptions used for three variables: the schedule of construction, the peak workforce, and the level of projected mining activity in Elko.

3.8.1 Schedule of Construction

The anticipated schedule of construction is designed with completion of construction of a unit every 2 years. This schedule creates a relatively steady construction workforce, due to the overlap of schedules between two units. The construction workforce varies between 325 and 805 (Table A-1 in Appendix A). The schedule would, in actuality, be driven by the demand for the produced energy. If the demand for energy slowed, the completion of construction of the units could be farther apart, removing the overlap of the workforces associated with each unit. This would reduce the anticipated peak construction workforce to 717, but would also reduce the lower end of the workforce to 0, 70, or 150 workers, depending on the number of years between construction of the units (5, 4, and 3 years, respectively).

This more extreme fluctuation in construction workforce would create a cyclical demand for community services, increasing the difficulty in providing these services. The principal impacts would be to services such as schools, fire protection, law enforcement, and medical care. The staffing requirements for these services would increase and decrease cyclically over time. The communities would have to decide whether to hire and fire teachers, firefighters, policemen, etc., as need dictated, to accept deficit service during the peak workforce periods, or to pay for extra service during the low workforce periods. For other services, such as utilities, the low employment periods would result in lower utilization of the facilities, which would not be a significant impact.

In addition to the fluctuating service demand associated with the extended schedule, the revenues associated with sale and use tax on

construction materials, and spending of salaries in the area would also fluctuate to a greater degree. The lack of stability in revenues could create difficulties for the local jurisdictions during budgetary planning.

3.8.2 Peak Workforce

The anticipated peak construction workforce is 805. During the case studies conducted by Electric Power Research Institute on 12 power plants, it was found that the actual peak was an average of 173 percent of the projected peak employment (EPRI 1982). The report stated that the most common cause of differences between actual and peak employment was delay in construction startup, and subsequent use of double shifts to make up time. Common sources of delay were:

- Regulatory delays
- Subcontractor performance and material delivery delays
- Weather delays
- Strikes and work stoppages
- Engineering, design and retrofit delays
- Competition for construction labor (EPRI 1982)

The actual peak employment at Valmy Unit I was 113 percent of the projected peak. The peak employment for Unit II was overestimated (97 percent of projected).

For the purpose of this sensitivity analysis, it is assumed that the actual peak of construction workforce is 175 percent of the projected peak of 805. This new hypothetical peak of 1400 workers is used here for further analysis.

3.8.2.1 Proposed Action. Using the same assumptions described in Appendix A, and assuming full occupation of the construction-worker camp (one worker in each space), the number of immigrating workers would be 704. This results in a population increase of 506 in Elko and 82 in Wells, during

peak construction (roughly 4 times the number anticipated throughout the analysis). In actuality, the number of immigrating workers would be less because workers would likely double and triple up in the 300 RV spaces during peak periods. In addition, construction-worker camps in the past have adjusted during peak periods by taking measures such as placing bunk beds in the dormitory rooms. Therefore, it is likely that the number of workers in the construction-worker camp could increase to the point where the number of inmigrants to the local communities is similar to the increase with the anticipated workforce schedule. Therefore, impacts to the local communities would be similar.

3.8.2.2 Proposed Access Road, No Construction-Worker Camp Alternative. Under this analysis scenario, the number of immigrating workers with the proposed access road, no construction-worker camp alternative would be 1260 during peak construction. This would result in a population increase of 1047 in Elko and 169 in Wells, during peak construction.

This can be compared with 532 in Elko and 86 in Wells with the anticipated workforce schedule. This population increase includes an increase of 328 school-aged children in the Elko County School District during the peak summer months, as compared to 126 with the anticipated workforce.

The substantial increase in construction-related population within each of the local communities would exacerbate any difficulties associated with the supply of community services.

3.8.2.3 Moor Summit Access Road, Construction-Worker Camp Alternative. The number of project-related inmigrants would be 1127 to Elko and 229 to Wells. This is roughly 4 times as large as the number anticipated throughout the Moor Summit access road, construction-worker camp alternative analysis.

3.8.2.4 Moor Summit Access Road, No Construction-Worker Camp Alternative. The number of project-related inmigrants related to peak construction would be 2330 in Elko and 473 in Wells. This can be compared with the anticipated peak of 1184 in Elko and 240 in Wells for the Moor Summit access road, no construction-worker camp alternative.

3.8.3 Mining Activity

The demographic conditions and service availability described in the socioeconomic analysis are based on the assumption that the number of mining employees in the Elko and Carlin area will remain constant. This assumption stems from conversations with local officials that have interviewed mining company officials in order to help estimate future population growth in Elko. These mining officials have indicated that mining construction is being completed in Fall 1989 and that as construction workers left the area, additional operation workers will arrive, keeping total mining employees at the current level.

The validity of the assumption is important considering service availability. The gold market is extremely volatile and is influenced by unpredictable levels such as the world market price of gold. An increase in the price of gold would likely result in increased mine construction in order to increase the rate of production. This would result in a similar mining and population boom in the area to that currently being experienced in Elko and Carlin. If this occurred, service and housing availability would continue to be strained. Power plant workers would have a difficult time settling in Elko and would likely live in higher proportion in the communities of Twin Falls, Jackpot, and Wendover, and the smaller communities of Oasis and Montello, depending on the access road chosen.

It is also possible that the price of gold could drop in the near future, resulting in a decrease in metal production. As the production rate decreased, the number of mine workers seeking housing and services in Elko would also decrease. This would increase availability of services for power plant workers, resulting in a greater ease of settlement in Elko.

4.0
REFERENCES CITED

American Chamber of Commerce Researchers Association. 1988. Cost of Living Index, Comparative Data for 260 Urban Areas. Fourth Quarter.

Billings P. 1989. Superintendent of Elko County School District. Personal Communication with Woodward-Clyde Consultants. February.

Boucher, G. 1989. Elko County Manager. Personal Communication with Woodward-Clyde Consultants. February, September.

Branch, K., J. Thompson, J. Crighton, and D.A. Hooper. 1982. Guide to Social Assessment, B.L.M. Prepared by Mountain West Inc., Billings, Montana. July.

Bureau of Business and Economic Research. 1983. Nevada Review of Business & Economics. University of Nevada. Reno.

Bureau of Land Management (BLM). 1982. Reference Guide to Social and Economic Techniques.

Cash, OP. 1988. Fire Chief, Elko Fire Department. Personal Communication with Woodward-Clyde Consultants. December.

Cash, OP. 1989. Fire Chief, Elko Fire Department. Personal Communication with Woodward-Clyde Consultants. September.

Chilton Engineering. 1988. Wastewater Facilities Planning Treatment Plant Expansion. November 7.

City of Elko, Fire and Building Departments. 1989. Building Permits Issued, Residential and Commercial, 1985 to September 8, 1989.

City of Wells. 1987. Results of income survey.

City of Wells. 1988. Memo from G. Yan, Mayor, to all Councilmen, City of Wells. "Employment Characteristics of City of Wells, October 1987 through September 1988." September 21.

Clarke, M. 1989. Labor Economist, Employment Security Research Department. Personal Communication with Woodward-Clyde Consultants. September.

Crick, D. 1989. Highland Realty, West Wendover. Memo. September.

Dunn, H. 1988. Chief of Police, Wells Police Department. Acting City Manager, City of Wells. Personal Communication with Woodward-Clyde Consultants. December.

Dunn, H. 1989. Chief of Police, Wells Police Department. Acting City Manager, City of Wells. Personal Communication with Woodward-Clyde Consultants. September.

Earhart, W. 1989. Department of Taxation, Centrally Assessed Properties, State of Nevada. Personal Communication with Woodward-Clyde Consultants. March.

Electric Power Research Institute (EPRI). 1982. Socioeconomic Impacts of Power Plants. EPRI EA-2228.

Electric Power Research Institute (EPRI). 1984. Assessing and Managing Socioeconomic Impacts of Power Plants.

Elko County Building Inspection Division of Department of Engineering Services. 1989. Yearly Activity Reports for West Wendover, Jackpot, and Spring Creek Subdivisions, and the County.

Forbes, G. 1988. Chief of Police, Elko Police Department. Personal Communication with Woodward-Clyde Consultants. December.

George K. Baum & Company. 1989. Preliminary Official Statement, Water Revenue Interim Debentures, City of Wells. September 12.

Guisti, B. 1989. Elko County Assessor's Office. Personal Communication with Woodward-Clyde Consultants. March.

Harris, D. 1989. Elko County School District. Personal Communication with Woodward-Clyde Consultants. February.

Harris, N. 1989. Undersheriff, Elko County Sheriff Department. Personal Communication with Woodward-Clyde Consultants. March.

Hawkins, R. 1989. Risk Management Administrator, Elko General Hospital. Personal Communication with Woodward-Clyde Consultants. March.

High Desert Advocate. 1989a. Elko General Obs Unit. September 6.

High Desert Advocate. 1989b. No Labor Day highway deaths in four counties. September 6.

King, A. 1988. Northern Holdings, Inc., Oasis Country Store. Letter to David Fee, Woodward-Clyde Consultants. December 28.

Klein, M. 1989. City of Elko, Assistant City Manager and City Planner. Personal Communication with Woodward-Clyde Consultants. September.

Knight, C. 1988. Superintendent of Elko County School District (retired December 31, 1988). Personal Communication with Woodward-Clyde Consultants. December.

Konakis, F. 1989. Elko City Engineer. Personal Communication with Woodward-Clyde Consultants. April.

Leistritz, F., and S. Murdock. 1981. The Socioeconomic Impact of Resource Development - Methods for Assessment.

Lenz, M. 1988. "Elko newcomers dealing with housing squeeze."

Lipparelli, L. 1988. Assistant City Manager, City of Elko. Personal Communication with Woodward-Clyde Consultants. December.

Lipparelli, L. 1989. City Manager, City of Elko. Personal Communication with Woodward-Clyde Consultants. March.

Madsen, C. 1988. Elko County Library. Personal Communication with Woodward-Clyde Consultants. December.

Marshall, P. 1989. Wells City Engineer, Consulting Engineering Services, Inc. Personal Communication with Woodward-Clyde Consultants. September.

McAlidon, D. 1989. Director, Department of Economic Development, City of Twin Falls. Memo. August. Personal Communication with Woodward-Clyde Consultants. August, September.

McDonald, L. 1989. Area Labor Market Analyst, Department of Employment, City of Twin Falls. Personal Communication with Woodward-Clyde Consultants. August.

Murdock, S., and F. Leistritz. 1979. Energy Development in the Western United States, Impacts on Rural Areas.

Murdock, S. et al. 1978. An Assessment of the Validity of the Gravity Model for Predicting Community Settlement Patterns in Rural Energy - Impacted Areas in the West. In Land Economics 54 (No.4, November).

Nevada Department of Taxation. 1986-1987 Annual Report.

North East Nevada Development Authority (NENDA). 1989. "A business portrait of the Carlin/Elko/Wells communities."

Region IV Development Association. 1988. City of Twin Falls Community Profile.

Rusnak, D. 1989. Secretary-Treasurer, Building and Construction Trades Council of Northern Nevada. Personal Communication with Woodward-Clyde Consultants. February.

Salicchi, C. 1988. Elko County Treasurer. Personal Communication with Woodward-Clyde Consultants. December.

Schacht, F. 1988. Public Works Department, City of Wells. Personal Communication with Woodward-Clyde Consultants. December.

Schacht, F. 1989. Public Works Department, City of Wells. Personal Communication with Woodward-Clyde Consultants. September.

Smith, J. 1989. Physician, Wells Medical Center. Personal Communication with Woodward-Clyde Consultants. March.

Smith, L. 1989. State Department of Education. Personal Communication with Woodward-Clyde Consultants. March.

Snyder, J. 1989. Justice of the Peace, Jackpot, Nevada. Personal Communication with Woodward-Clyde Consultants. February.

State of Nevada. 1988. Nevada Statistical Abstract. Office of Community Services. September.

Tilley, C. 1989. "Sheriff requests five new officers for county." In Wells Progress. March 14-20.

Tripp, L. 1989. Economic Development Coordinator, City of Wells. Personal Communication with Woodward-Clyde Consultants. March.

Trousdale, E. 1989. Mayor of the City of Carlin. Personal Communication with Woodward-Clyde Consultants. February.

US Department of Commerce. 1975. Construction Worker Profile. Final Report by Mountain West Research, Inc. PB-292 507. December.

Walker, C. 1989. Elko County Sheriff Department. Personal Communication with Woodward-Clyde Consultants. February.

Wells Progress. 1989a. "Structure for the new Wells library." March 14-20.

Wells Progress. 1989b. "Unemployment for November continues downward trend for the State of Nevada." January 3-9.

Wendover City Offices. 1989. Personal Communication with Woodward-Clyde Consultants. September.

Wendover High School. 1989. Personal Communication with Woodward-Clyde Consultants. September.

Wheeler, M. 1989. City Clerk/Recorder, Wendover, Utah. Personal Communication with Woodward-Clyde Consultants. September.

Williams, C. 1989. Public Works Director, City of Elko. Personal Communication with Woodward-Clyde Consultants. March.

Windburn, D. 1989. City of Elko, Building Department. Personal Communication with Woodward-Clyde Consultants. August.

Woodward-Clyde Consultants (WCC) 1982. Social and Economic Impact Survey, North Valmy Unit 1 Power Plant Construction, Humboldt County, Nevada. Prepared for Sierra Pacific Power Company. October.

Yan, G. 1989. Mayor, City of Wells. Personal Communication with Woodward-Clyde Consultants. March.

Zuck, B. 1989. Chamber of Commerce, City of Twin Falls. Personal Communication with Woodward-Clyde Consultants. August.

APPENDIX A
METHODS AND ASSUMPTIONS USED TO DEVELOP POPULATION AND EMPLOYMENT PROJECTIONS

Estimates of the increase in direct and indirect employment and population are based on information provided by the project proponent on anticipated workforce and construction schedule, as well as assumptions concerning worker marital status and family size, secondary employment effects, and the distribution of inmigrating workers among the affected local communities. Population increases in the study area would occur during both the construction and the operation phases of the project.

Data sources for this analysis include the project proponent, relevant existing studies, census data, and local agencies. Anticipated workforce and construction schedule data have been provided by the project proponent. Assumptions concerning marital status, family size, distribution of inmigrants among the local communities, as well as the number of local hires and support jobs that would result from the project, were based on census data; experience with a similar power plant at Valmy, Nevada; socioeconomic case studies on power plant development conducted by Electric Power Research Institute (EPRI 1982, 1984); and discussions with agency personnel familiar with the study area. The Valmy power plant experience is particularly applicable because the power plant units that are proposed at Thousand Springs are similar to those at Valmy. The Valmy power plant, located between Winnemucca and Battle Mountain, was constructed during a period of increased mining activity. This is similar to the current situation in the Elko area. In addition, the construction crew at Valmy used a construction-worker camp. (Two alternatives are being considered for the construction workforce accommodation component of this

project: a construction-worker camp alternative and the no construction-worker camp alternative.)

The EPRI (1982) case studies examined the socioeconomic effects of power plant construction and operation in 12 communities. Research findings were based on case studies of the 12 power plants and a review of more than 600 documents. The case studies examined both anticipated effects and actual effects. Nine of the power plants studied were coal-fired power plants. Population and employment estimates for this proposed project were generated from the data contained in these sources and have been discussed with local agency personnel.

The construction and operation workforce estimates are based on the assumption that the construction of a new unit would begin every 2 years. In reality, construction of the units would depend on market demand for electricity. The schedule, therefore, could either compress or lengthen from the planned schedule, which is based on the anticipated construction of one unit every 2 years. The peak construction workforce is the peak during that given year; therefore, while the peak workforce is 800, the average workforce throughout that year could be 500. It is not known how long the peak would last but it is anticipated to last anywhere from less than a month up to 2 to 3 months. In addition, because the workforce consists of a combination of workers finishing one unit as others begin another, the peak workforce for the year could be overstated if the peak workforces for each unit do not occur at the same time of year. Tables A-1 and A-2 present the anticipated peak construction and operation workforces in each year. The total anticipated workforce in each year is shown in Table A-3 and on Figure A-1.

This appendix discusses the indirect effects of these anticipated construction and operation jobs in four categories:

Table A-1. ANTICIPATED PEAK CONSTRUCTION WORKFORCE BY YEAR

Year	Unit 1	2	3	4	5	6	7	8	Total
1991	289								289
1992	653								653
1993	717	88							805
1994	70	255							325
1995		610	85						695
1996		70	255						325
1997			610	85					695
1998			70	255	100				425
1999				610	190				800
2000				70	653				723
2001					717	88			805
2002					70	255			325
2003						610	85		695
2004						70	255		325
2005							610	85	695
2006							70	255	325
2007								610	610
2008								70	70
2009								40	40

Table A-2. ANTICIPATED PEAK OPERATIONS WORKFORCE BY YEAR

Year	Unit 1	2	3	4	5	6	7	8	Total
1993	25								25
1994	115								115
1995	115	15							130
1996	115	30							145
1997	145		20						165
1998	145		107						252
1999	145		107	15					267
2000	145		107	30					282
2001	145		137		25				307
2002	145		137		115				397
2003	145		137		115	15			412
2004	145		137		115	30			427
2005	145		137		145		20		447
2006	145		137		145		107		534
2007	145		137		145		107	15	549
2008	145		137		145		107	30	564
2009	145		137		145		137		564

Table A-3. ANTICIPATED TOTAL WORKFORCE

Year	Peak Construction Workforce	Peak Operation Workforce	Total Peak Workforce
1990			
1991	289		289
1992	653		653
1993	805	25	830
1994	325	115	440
1995	695	130	825
1996	325	145	470
1997	695	165	860
1998	425	252	677
1999	800	267	1067
2000	725	282	1005
2001	805	307	1112
2002	325	397	722
2003	695	412	1107
2004	325	427	752
2005	695	447	1142
2006	325	534	859
2007	610	549	1159
2008	70	564	634
2009	40	564	604
2010		564	564

- Construction workforce with a construction-worker camp
- Construction workforce without a construction-worker camp
- Operation workforce
- Peak total workforce

CONSTRUCTION WORKFORCE WITH A CONSTRUCTION-WORKER CAMP

The construction workforce would consist of tradespeople who might have assignments of limited duration. Therefore, even if a workforce is described as being at a certain size (for example, 500 average in a given year), it is unlikely that the same 500 workers would be employed throughout the year. It is more likely that tradespeople would move in and out of the area for temporary employment. The workforce might reach a peak of 800, but average only 500 over the course of the year. Some tradespeople (e.g., laborers) might be employed for the duration of the project, while others (e.g., painters) might be employed for shorter periods of time on each of the power plant units.

The peak construction workforce would be 805 workers in 1993. Based on the experience at Valmy, it is estimated that approximately 10 percent of the workforce would be hired locally and, therefore, would already be served by the existing community services. The local workforce would not live in the construction-worker camp. At the peak, it is assumed that the camp of 220 dormitory rooms and 300 RV spaces would be full. Therefore, the inmigration of workers to local communities would consist of 205 workers (805 peak jobs minus 80 local hires minus 520 workers living in the construction-worker camp). The population in the local communities would likely be smaller than 205 because each RV space in the construction-worker camp could support more than one worker. During the peak months, this doubling up would likely occur. However, for the purpose of a worst-case analysis, it is assumed that only one worker would reside in each RV space. The inmigrating workforce would consist of those workers who do not live in the construction-worker camp because they prefer to live in town or

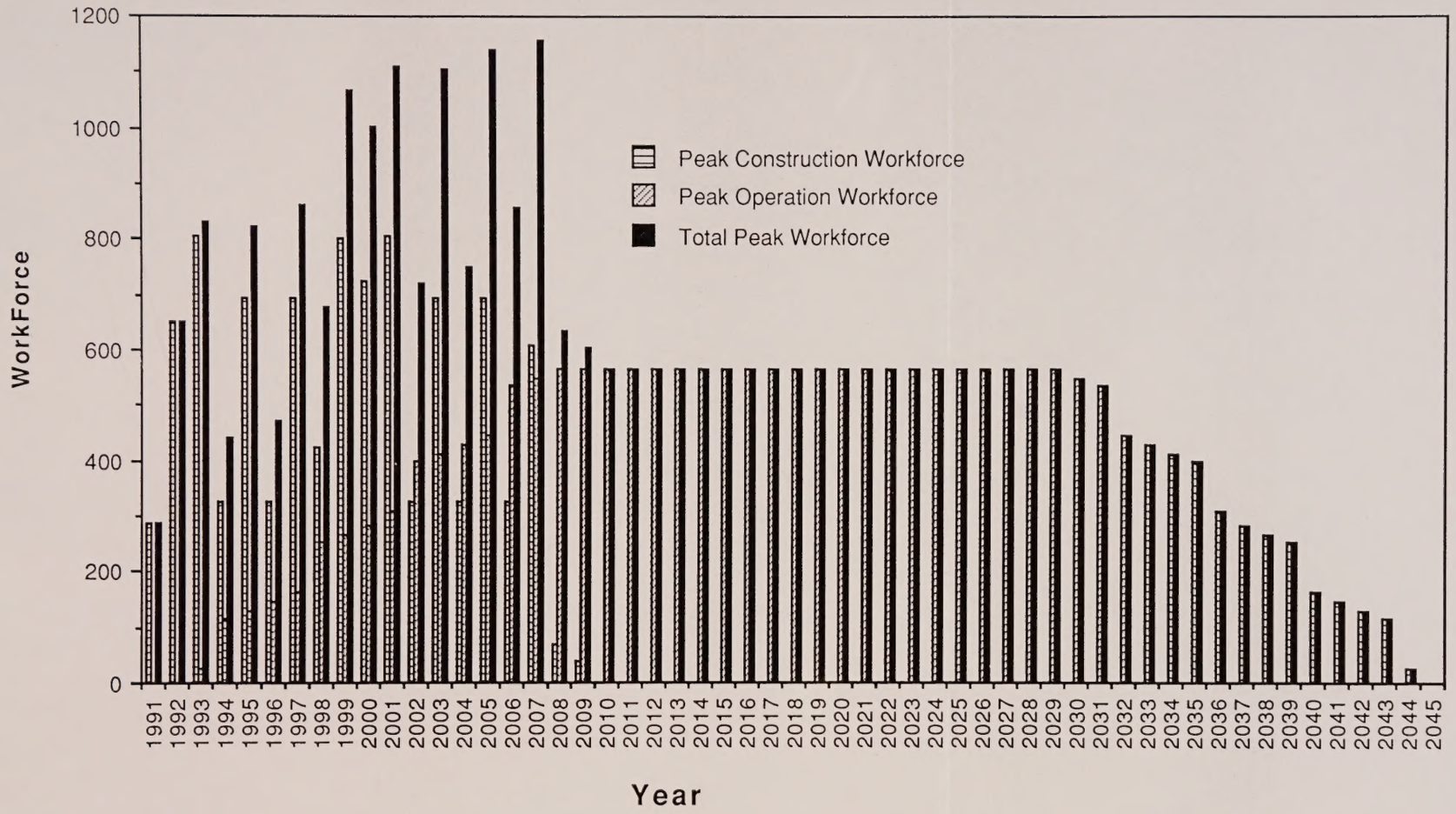
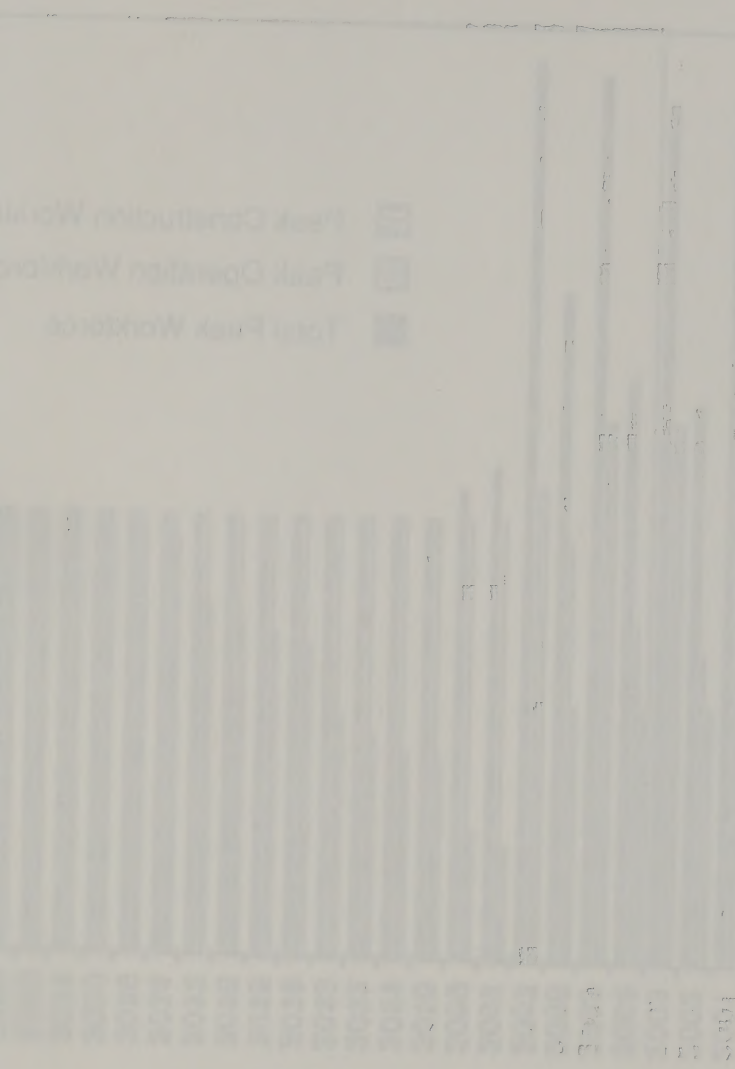


Figure A-1. ANTICIPATED PEAK WORKFORCE



because they want their families to accompany them and those workers who are on a waiting list to get into the construction-worker camp. The average workforce during that peak year is expected to be approximately 500. As the number of workers decreases from the peak and workers on the waiting lists move into the construction-worker camp, it is anticipated that the number of workers in the communities would decrease somewhat from 205; however, the workers who prefer to live in town and the workers with families would be expected to remain in the communities. In this way, the construction-worker camp would absorb the fluctuations in the size of the construction workforce, while the population in the local communities would remain relatively constant.

Dependents

In order to estimate the number of children accompanying the inmigrating workers into the communities, data from the Valmy experience were examined. Surveys of Valmy construction personnel were conducted twice a year to determine the residence location of the construction workers and number of children associated with the project who were enrolled in local schools. The results of three representative surveys showed that for each worker who lived in the towns, an average of 0.55 children were in the school systems. These surveys did not report marital status so the assumption associates school-aged children with workers, single or married. Using this assumption, it can be estimated that 113 school-aged children would arrive in towns with the peak construction workforce (205 workers times 0.55 children).

The EPRI studies suggest average family sizes of about 3.3 for construction-worker families, but caution that family sizes should be examined in each particular study area. The average family size in Elko County in 1980 was 3.24. It is assumed that all families that choose to relocate have two parents and 1.24 children. Of these children, it can be assumed that 70 percent are school-aged (5-17 years). Therefore, there would be 0.868 (1.24 times 70 percent) school-aged children per family.

With 113 school-aged children per family, there are 130 families (130 families times 0.868 school-aged children per family equals 113 school-aged children). In addition, it is assumed that 130 spouses would accompany the town workers. The population increase in the communities would be approximately 448 people (Figure A-2), consisting of 205 workers, 130 spouses, and 113 children. (This peak number of 448 people in the communities could decrease slightly with an average workforce as single or unaccompanied workers on the waiting list for the construction-worker camp moved into the camp as spaces became available. However, it is assumed that the number of children in town would remain constant, because workers that have relocated families to the area would not likely move into the camp.)

Indirect Jobs

In addition to the direct jobs provided by the construction of the power plant, other indirect jobs would be created through a "ripple" effect in the local economy. The estimation of an employment multiplier can be calculated by a variety of methods, including through the use of input-output models, and these multipliers vary widely. The EPRI case studies examined the predicted increase in service jobs and compared it to the actual increase in such jobs. As a general rule, the EPRI studies found that support jobs were overestimated for two reasons. One reason was that support jobs were calculated annually for the peak workforce, but in actuality, the local community did not add service jobs for the short duration of a peak. In addition, the studies found that the percentage of local hires was higher than predicted and, therefore, fewer new local service jobs were needed to handle inmigrants. The studies also found that multipliers were lower in the rural areas due to "leakage" of purchases because of the relatively poor availability of local goods and services. As purchases are made out of the local area, fewer support jobs are required locally. The EPRI studies estimated that for a rural area 0.1 to 0.2 new jobs were created for each peak construction job, or 0.2 to 0.3 new jobs were created for each inmigrating annual average construction job.

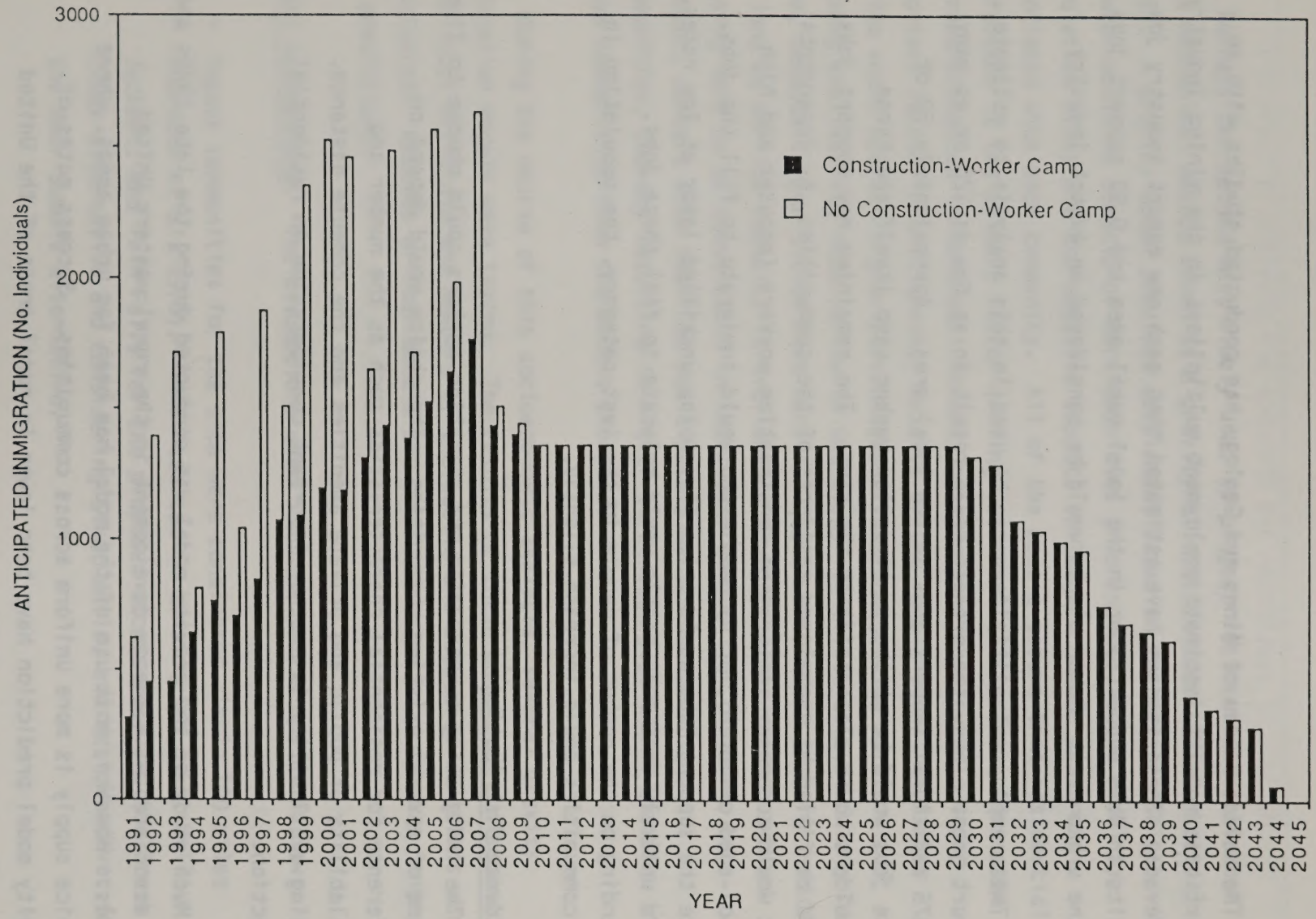


Figure A-2. ANTICIPATED INMIGRATION BY YEAR

The Nevada Bureau of Mines and Geology has conducted studies with an export base model to estimate employment multipliers in the mining industry in Nevada. These studies have estimated that each new export industry job results in 0.75 support jobs in the local rural area and 0.50 support jobs in the urban area. Power plants would be considered an export industry.

These employment multipliers can be used in this analysis to estimate support jobs. Thus, the project could result in as few as 120 or as many as 375 additional support jobs in the local area. Approximately 50 of these jobs would be at the construction-worker camp itself and these jobholders would also reside at the camp. The remaining new support jobs would be filled by unemployed residents of the communities, by dependents that would accompany inmigrating construction workers (spouses and high school-aged children), or by people who would inmigrate to fill the jobs. Since the support jobs would primarily employ unskilled labor at low rates, it is unlikely that many people would relocate to fill these jobs. Depending on the number of people in the last category, the population in the communities could increase slightly.

Residence Distribution

The inmigrating construction and operation workers could choose to live in one of several existing communities. The choice would depend on preference for residential characteristics such as the number and availability of public and private amenities and the commute distance. Housing availability is another important consideration in residential selection.

Much study of the gravity model was conducted during the late 1970s and was associated with energy development in the rural western United States. However, most use of the model has been for urban areas, where service supply is more uniform across communities. Success rates of gravity model prediction have been lower in rural areas of the United States (Murdock et al. 1978).

Perhaps the method most widely used to project residential settlement is a mechanical method known as a gravity allocation model (Murdock et al. 1978). A gravity model predicts settlement based on the relationship between positive aspects of more amenities (represented in the model by population size) and the negative aspects of longer commute distances associated with each community. All of the models assume that residential preference is the primary factor driving workforce settlement. Given the current situation in northeast Nevada, housing availability is also an important factor in settlement. Results of the models show that larger cities would attract higher percentages of the inmigrating workers. If housing availability remains low in the study region, this would likely be true, because larger cities have more ability to respond to housing demand, as long as service capacity is available. However, if reasonably priced housing were to be constructed in the closer communities of Wells and Jackpot, workers with families would likely settle in the closer communities, thereby resulting in higher percentage population increase in those communities than the models predicted.

During the course of this socioeconomic analysis, several gravity allocation models were tested. The results of these models were discussed with local officials and members of the public and suggested revisions were considered. Results of four models are provided below to present a range of predictions.

Model Assumptions. The assumptions used in these models are as follows:

- Impact communities for the site were considered within 100 miles (Murdock et al. 1978). This resulted in considering Elko, Wells, Jackpot, and Twin Falls for the proposed access road and the Brush Creek alternative and considering Elko, Wells, and West Wendover for the Moor Summit alternative.

- Assumptions of population and distance are provided in Table A-4.

Model #1. The first model considered is of the form:

$$P = \frac{\frac{Pop}{Dist^b}}{\sum \frac{Pop}{Dist^b}}$$

where P = Percent of population expected to inmigrate to community i
Pop = Population of community i
Dist = Distance from plant site to community i (in miles)
b = Distance elasticity. Commonly ranges from 0.5 to 2.0 (Murdock et al. 1978)

In the first model, b = 1 for construction workers, so that distance and population would have an equal effect. Studies have shown that operation workers are more likely to settle closer to the site (EPRI 1982), so b was chosen to equal 2 so that distance would have a stronger negative effect on the choice of residence.

Results of the model are presented in Table A-5.

Model #2. A second model was utilized which has been used by BLM in Montana. This gravity model includes an attractiveness index and different distance elasticities.

The model is as follow:

$$P = \frac{[P/Dist^b]A}{\sum[\frac{Pop}{Dist^b}]A}$$

where A = Attractiveness index

Table A-4. POPULATION AND DISTANCE ASSUMPTIONS

Alternative	City	Population	Distance (miles)
Proposed Access	Twin Falls	28,000	98
	Elko	16,000	90
	Wells	1,400	40
	Jackpot	1,550	55
Brush Creek	Same as proposed access		
Moor Summit	Elko	16,000	80
	Wells	1,400	29
	Wendover	4,000[a]	71

[a] Includes West Wendover, Nevada and Wendover, Utah

Table A-5. RESULTS OF MODEL #1

Alternative	Activity	City	Calculation	Percentage
Proposed Access	Construction	Twin Falls	28,000/98	54
		Elko	16,000/90	34
		Wells	1,400/40	7
		Jackpot	1,550/55	5
	Operation	Twin Falls	$28,000/(98)^2$	46
		Elko	$16,000/(90)^2$	31
		Wells	$1,400/(40)^2$	15
		Jackpot	$1,550/(55)^2$	8
Brush Creek	Same as proposed access			
Moor Summit	Construction	Elko	16,000/79	66
		Wells	1,400/29	16
		Wendover	4,000/71	18
	Operation	Elko	$16,000/(79)^2$	51
		Wells	$1,400/(29)^2$	33
		Wendover	$4,000/(71)^2$	16

The attractiveness index is a relative ranking of the communities for the positive aspects of local availability and incidence of public services (health care, schools, recreational facilities) and private services (stores, motels, theaters, bank, newspaper). Attractiveness indices are also reduced based on restrictions in housing availability or growth.

Using the described index, the relative ranking is:

- Twin Falls - 16
- Elko - 13.5
- Wendover - 12
- Wells - 11
- Jackpot - 9.5

In addition, BLM used distance elasticities of 1.44 for construction and 1.47 for operation (Murdock and Leistritz 1979). These elasticities were determined through a regression model of behavior of energy-related construction and operation workers in North Dakota, South Dakota, Wyoming, and Montana.

The attractiveness of higher disposable incomes and lower cost of living was also considered for inclusion in this model. The State of Idaho has a state personal income tax, which would result in a lower disposable income in Idaho than in Nevada, which does not have a state income tax. However, the State of Idaho and Twin Falls have a lower cost of living than the State of Nevada. The composite cost of living index in Twin Falls was 90.1 (on a scale of 100) and 75.8 for housing in the Fourth Quarter 1988. The urban areas of Nevada had composite indices of 102 to 105 and housing indices of 114 to 117 during the same time (American Chamber of Commerce Researchers Association 1988). Information for northeast Nevada was not available but it is known that the recent increase in service demand in the Elko area has resulted in increased prices. The effect of the lower

disposable income in Idaho would be offset by the increased purchasing power in that area and would balance the attractiveness between the two areas. In addition, studies were not found that investigated the effect of cost-of-living and disposable income on residential preference. Therefore, they were not included as variables in the gravity model.

The results from Model #2 are presented in Table A-6. The results of the construction scenario are very similar to those of Model #1. However, the construction and operation results are essentially identical, contrary to findings in EPRI case studies.

Model #3. For a third approach, the attractiveness indices were used with the distance elasticities from Model #1.

The results are presented in Table A-7.

Model #4. Based on communication with local agency officials and residents, another model was developed to consider the condition of the roads between the project site and potentially affected communities. Two aspects were considered: travel time and safety. To estimate travel time, average speeds were assumed as:

- Access roads - 35 mph
- Interstate 80 - 70 mph
- Highway 93 - 60 mph

Resulting travel times are shown in Table A-8.

Safety along commute routes was also considered. One trouble spot along Highway 93 is on HD Summit, which has been closed periodically in the winter. HD Summit is located between Wilkins and Wells and would, therefore, affect travel to and from Wells and Elko, and the project site. Other unsafe areas have been identified at Moor Summit, which has

Table A-6. RESULTS OF MODEL #2

Alternative	Activity	City	Calculation	Percentage
Proposed Access	Construction	Twin Falls	$[28,000/(98)^{1.44}]16$	57
		Elko	$[16,000/(90)^{1.44}]13.5$	31
		Wells	$[1,400/(40)^{1.44}]11$	7
		Jackpot	$[1,550/(55)^{1.44}]9.5$	5
	Operation	Twin Falls	$[28,000/(98)^{1.47}]16$	57
		Elko	$[16,000/(90)^{1.47}]13.5$	31
		Wells	$[1,400/(40)^{1.47}]11$	7
		Jackpot	$[1,550/(55)^{1.47}]9.5$	5
Brush Creek	Same as proposed access			
Moor Summit	Construction	Elko	$[16,000/(79)^{1.44}]13.5$	64
		Wells	$[1,400/(29)^{1.44}]11$	19
		Wendover	$[4,000/(71)^{1.44}]12$	17
	Operation	Elko	$[16,000/(79)^{1.47}]13.5$	64
		Wells	$[1,400/(29)^{1.47}]11$	19
		Wendover	$[4,000/(71)^{1.47}]12$	17

Table A-7. RESULTS OF MODEL #3

Alternative	Activity	City	Calculation	Percentage
Proposed Access	Construction	Twin Falls	[28,000/(98)]16	60
		Elko	[16,000/(90)]13.5	31
		Wells	[1,400/(40)]11	5
		Jackpot	[1,550/(55)]9.5	4
	Operation	Twin Falls	$[28,000/(98)^2]16$	53
		Elko	$[16,000/(90)^2]13.5$	30
		Wells	$[1,400/(40)^2]11$	11
		Jackpot	$[1,550/(55)^2]9.5$	6
Brush Creek	Same as proposed access			
Moor Summit	Construction	Elko	[16,000/(79)]13.5	69
		Wells	[1,400/(29)]11	14
		Wendover	[4,000/(71)]12	17
	Operation	Elko	$[16,000/(79)^2]13.5$	56
		Wells	$[1,400/(29)^2]11$	29
		Wendover	$[4,000/(71)^2]12$	15

Table A-8. TRAVEL TIMES FOR MODEL #4

Alternative	City	Calculation	Travel Time
Proposed Access	Twin Falls	14(60/35)+84(60/60)	108
	Elko	14(60/35)+26(60/60)+50(60/70)	93
	Wells	14(60/35)+26(60/60)	50
	Jackpot	14(60/35)+41(60/60)	65
Brush Creek	Same as proposed access		
Moor Summit	Elko	23(60/35)+56(60/70)	87
	Wells	23(60/35)+6(60/70)	45
	Wendover	23(60/35)+47(60/70)	80

high accident frequency because of a deceptively high grade (High Desert Advocate 1989b), and on Highway 93 north of Wilkins (Dunn 1989).

After consideration of safety characteristics, it was decided to not include a safety component in the residence preference model. All communities would be affected by some safety concern. Therefore, the model which utilizes transportation is identical to Model #3, except that Dist = travel time instead of distance.

The results of Model #4 are provided in Table A-9.

Summary of Model Results. A summary of the model results is provided in Table A-10. Results of all the models were fairly similar. For the purpose of quantitative analysis, the results of Model #3 are used to describe the magnitude of effects in each community. Model #3 was chosen because it contains the attractiveness index, it has different results for construction and operation workers, and it uses distance instead of travel time as a variable (travel time has not been used in the studies reviewed).

Applying the percentages to the inmigrating peak construction workers and their families results in the distribution provided in Table A-11. The number of people living in each community would decrease as the construction workforce drops from the peak because workers on a waiting list could move into the construction-worker camp. However, the number of children would remain more or less constant because families that relocate would remain in the communities.

Summary

For the construction workforce with a construction-worker camp, approximately 80 local workers would be hired at peak construction and up to 520 additional workers would live in a construction-worker camp. At peak construction, population in the communities could increase by 448, decreasing as employment is reduced from the peak (Table A-11). The

Table A-9. RESULTS OF MODEL #4

Alternative	Activity	City	Calculation	Percentage
Proposed Access	Construction	Twin Falls	[28,000/108]16	59
		Elko	[16,000/93]13.5	33
		Wells	[1,400/50]11	5
		Jackpot	[1,550/65]9.5	3
	Operation	Twin Falls	$[28,000/(108)^2]16$	53
		Elko	$[16,000/(93)^2]13.5$	34
		Wells	$[1,400/(50)^2]11$	8
		Jackpot	$[1,550/(65)^2]9.5$	5
Brush Creek	Same as proposed access			
Moor Summit	Construction	Elko	[16,000/87]13.5	72
		Wells	[1,400/45]11	10
		Wendover	[4,000/80]12	18
	Operation	Elko	$[16,000/(87)^2]13.5$	65
		Wells	$[1,400/(45)^2]11$	18
		Wendover	$[4,000/(80)^2]12$	17

Table A-10. SUMMARY OF MODEL RESULTS

Alternative	City	Activity	Model 1	Model 2	Model 3	Model 4
			(Percent)			
Proposed Access	Twin Falls	Construction	54	57	60	59
	"	Operation	46	57	53	53
	Elko	Construction	34	31	31	33
	"	Operation	31	31	30	34
	Wells	Construction	7	7	5	5
	"	Operation	15	7	11	8
	Jackpot	Construction	5	5	4	3
	"	Operation	8	5	6	5
Brush Creek	Same as proposed access					
Moor Summit	Elko	Construction	66	64	69	72
	"	Operation	51	64	56	65
	Wells	Construction	16	19	14	10
	"	Operation	33	19	29	18
	Wendover	Construction	18	17	17	18
	"	Operation	16	17	15	17

Table A-11. POPULATION AND JOB INCREASES IN LOCAL COMMUNITIES ASSOCIATED WITH CONSTRUCTION WORKFORCE, PROPOSED ACTION

	Proposed Action[a,b]	Moor Summit Access
Population Increase		
Twin Falls	269	0
Elko	139	309
Wells	22	63
Jackpot	18	0
Wendover	0	76
Total	448	448
Increase in School-aged Children		
Twin Falls	68	0
Elko	35	78
Wells	6	16
Jackpot	4	0
Wendover	0	19
Total	113	113
Increase in Jobs[c]		
Direct	500-800	500-800

[a]Estimates are for peak construction workforce of 800. Population increases would decrease slightly for average construction workforce.

[b]Results for Brush Creek alternative are the same as for the proposed Action.

[c]Range is for average construction workforce of 500 and peak construction workforce of 800.

estimated peak distribution of workers and their dependents would be 269 in Twin Falls, 139 in Elko, 22 in Wells, and 18 in Jackpot for the proposed access and Brush Creek alternative. Distribution would be 309 in Elko, 63 in Wells, and 76 in Wendover for the Moor Summit alternative. The proposed action would result in a peak of 805 direct construction jobs and approximately 500 annual average construction jobs. Indirect employment could consist of as few as 120 (800 times 0.15 or 500 times 0.25) or as many as 375 (500 times 0.75) jobs, including 50 in the construction-worker camp. The local population could increase slightly if some of these jobs were filled by inmigrants, rather than by existing residents or the dependents of inmigrating power plant workers.

CONSTRUCTION WORKFORCE WITHOUT A CONSTRUCTION-WORKER CAMP

Power plant construction phase employment would consist of a peak workforce of 805 and an annual average of 500. The ranges given in this discussion are based on the differences between the average and peak workforces. Based on the Valmy experience, it is assumed that 10 percent of the construction workforce would be hired locally. Therefore, the number of inmigrating workers would range between 450 and 725.

Dependents

The EPRI case studies reported that an average of 25 percent of inmigrating construction workers were single, 25 percent were married without children, and 50 percent were married with families. For the 50 percent married with children, it is assumed that the family size is similar to the family size in Elko County, which was 3.24 in 1980. Is is assumed that approximately 70 percent of the children are school-aged children (5-17 years old). Based on these assumptions, the number of single inmigrants would range from 112 to 181. Those married without children would range from 112 to 181, while those married with families would range from 226 to 362. The total construction-related population increase, including both single workers and married workers with families,

would range from 1068 to 1716 (Figure A-2), which would include 196 to 314 school-aged children.

Indirect Jobs

The range of support jobs, 120 to 375, would be similar to those under the construction-worker camp alternative. Depending on the available service capacity for temporary housing and feeding of construction workers, the 50 workers that would be required to serve the construction workers in the camp might not be needed to serve those same workers in the communities.

Residence Distribution

The residence distribution percentages with this alternative would be the same as for the construction-worker camp alternative. This would result in the increase shown in Table A-12.

Summary

For the construction workforce without a construction-worker camp, approximately 80 workers would be hired locally at peak construction. At peak construction, population in the communities could increase by 1716, decreasing to 1068 as employment drops back to the average annual workforce (Table A-12). Distribution of the residents would be 641 to 1030 in Twin Falls, 331- to 532 in Elko, 53 to 86 in Wells, and 43 to 68 in Jackpot for the proposed access and Brush Creek alternative. Distribution would be 737 to 1184 in Elko, 149 to 240 in Wells, and 182 to 292 in Wendover for the Moor Summit alternative. The project would result in 805 direct peak construction jobs and approximately 500 annual average jobs. The indirect jobs could be an addition of as few as 120 or as many as 375 new jobs, located in the local communities. These support jobs could be filled by existing unemployed residents, dependents (spouses and high school-aged children) who would accompany inmigrating construction workers, or workers who inmigrate to fill the jobs. Depending on the number of workers in the last category, populations in the local communities could increase.

Table A-12. POPULATION AND JOB INCREASES IN LOCAL COMMUNITIES ASSOCIATED WITH CONSTRUCTION WORKFORCE, NO CONSTRUCTION-WORKER CAMP ALTERNATIVE

	Proposed Access[a]		Moor Summit	
	Average	Peak	Average	Peak
Population Increase				
Twin Falls	641	1030	0	0
Elko	331	532	737	1184
Wells	53	86	149	240
Jackpot	43	68	0	0
Wendover	0	0	182	292
Total	1068	1716	1068	1716
Increase in School-aged Children				
Twin Falls	117	188	0	0
Elko	61	97	135	217
Wells	10	16	28	44
Jackpot	8	13	0	0
Wendover	0	0	33	53
Total	196	314	196	314
Increase in Jobs				
Direct	500	800	500	800

[a]Results for Brush Creek alternative are the same as for the proposed action.

OPERATION WORKFORCE

The operation workforce would increase slowly and steadily to operate the power plant units as the units were completed. The first operation workers are expected in 1993 for the first unit, which is planned for completion in 1994. The projected operation staff is approximately 140 workers for each successive pair of units and 564 workers for all eight units. Based on experience at the Valmy power plant, it is assumed that 10 percent of the operating workforce would be hired from the local area. As the local high school graduates became knowledgeable of the jobs and pay scales available, the 10 percent local hire assumption could increase to higher levels. However, the 10 percent estimate will be carried forward for analysis, which means an inmigration of 508 operating workers at full buildout of the power plant.

Dependents

The EPRI case studies found that 70 to 80 percent of the operation workers were married with families, which is a higher percentage than for construction workers. Assuming that 75 percent of operation workers are married with families, that the average family size is 3.24, and that 70 percent of the children are school-aged children, the number of people inmigrating to the local communities would be 127 single workers and 381 family workers for a total population of 1361 in 2010 (Figure A-2), which would include 330 school-aged children.

Indirect Jobs

The EPRI case studies found that the employment multiplier applied to operation jobs was higher than that associated with the construction jobs because of the permanence of the operation jobs. EPRI reports an economic multiplier of 0.3-0.5 additional service jobs for each direct operation job.

Summary

For the operation workforce at full buildout of the eight power plant units, approximately 56 workers would be hired locally. Population in the communities would increase by 1362, with 722 in Twin Falls, 408 in Elko, 150 in Wells, and 82 in Jackpot for the proposed access and Brush Creek alternative. The distribution would be 763 in Elko, 395 in Wells, and 204 in Wendover for the Moor Summit alternative (Table A-13). The increase in children associated with this permanent workforce would be 330. The operation of the power plant would result in 564 direct jobs and as few as 225 (560 times 0.4) or as many a 420 (560 times 0.75) support jobs. These jobs could be filled by local, unemployed residents; dependents (spouses and high school-aged children) that would accompany the operation workers; or inmigrating workers. Population in the communities could increase if workers inmigrate for support jobs.

PEAK TOTAL WORKFORCE

The construction and operation workforces would overlap once the first unit of the power plant was completed, as shown in Table A-3. Therefore, the peak number of workers associated with the project would actually be a combination of construction and operation workers. As can be seen in Table A-3, the actual planned peak of 1150 would occur in 2007, after seven units have been completed and while the eighth unit is being constructed. Because this event would occur 20 years in the future and is difficult to predict with certainty, this analysis focuses on the peak of approximately 1100 workers around the turn of the century. The estimated population and employment increases are presented in Table A-14 based on 800 construction workers and 300 operation workers and using the same assumptions previously used for each type of worker. Given all the assumptions for workforce and schedule, population in the areas could increase by approximately 1200 if a construction-worker camp were provided and by a range of 1872 to 2520 (Figure A-2) if one were not provided. The peak in population growth would occur around the turn of the century and decrease approximately 10 years

Table A-13. POPULATION AND JOB INCREASES IN LOCAL COMMUNITIES ASSOCIATED WITH OPERATION OF ALL EIGHT UNITS

	Proposed Action[a]	Moor Summit
Population Increase		
Twin Falls	722	0
Elko	408	763
Wells	150	395
Jackpot	82	0
Wendover	0	204
Total	1362	1362
Increase in School-aged Children		
Twin Falls	175	0
Elko	99	185
Wells	36	96
Jackpot	20	0
Wendover	0	49
Total	330	330
Increase in Jobs		
Direct	564	564

[a]Results for Brush Creek alternative are the same as for the proposed action.

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Table A-14. POPULATION AND JOB INCREASES IN LOCAL COMMUNITIES ASSOCIATED WITH PEAK CONSTRUCTION WORKFORCE OF 800 AND OPERATION WORKFORCE OF 300

	Construction-Worker Camp Alternative[a]		No Construction-Worker Camp Alternative[b]	
	Proposed	Moor Summit	Proposed	Moor Summit
Population Increase				
Twin Falls	652	0	1024-1413	0
Elko	356	713	548-749	1142-1589
Wells	101	272	132-165	358-449
Jackpot	61	0	86-111	0
Wendover	0	185	0	290-400
Total	1170	1170	1790-2438	1790-2438
Increase in School-aged Children				
Twin Falls	160	0	209-280	0
Elko	88	175	113-149	232-314
Wells	25	66	29-35	79-95
Jackpot	14	0	19-24	0
Wendover	0	46	0	59-79
Total	287	287	370-488	370-488
Increase in Jobs				
Direct	800-1100	800-1100	800-1100	800-1100

[a]Estimates are for peak construction workforce of 800. Population increases in communities decrease slightly for average construction workforce.

[b]Range is for average construction workforce of 500 and peak construction workforce of 800.

later to the increase associated with the operation workforce alone, once all construction was completed.

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